Sree Narayana Guru College
of Engineering & Technology
CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307
Est. 2003

APPRECIATION CERTIFICATES 2018-23

GOVERNMENT OF KERALA
DEPARTMENT OF TECHNICAL EDUCATION

GOVERNMENT POLYTECHNIC COLLEGE, KASARAGOD

Approved by AICTE & Affiliated to State Board of Technical Education, Kerala

P.O. PERIYE, KASARAGOD DIST. PIN - 671 320

PH : 0467 - 2234933 (PRINCIPAL), 0467- 2234020 (OFFICE), FAX : 0467-2234933, Mob: 9400006458.
www.gpckasaragod.ac.in, E-mail : principalksgd@gmail.com

14-06-2022

CERTIFCATE

The Industry On Campus (IOC) Govt. Polytechnic College Periya Kasaragod express the sincere gratitude to Prof. Jacob Thomas Assistant Professor in Mechanical Engineering Sree Narayana Guru College of Engineering and Technology Korom Payyanur for delivering classes in connection with the Summer Internship Training Programme 2022 on 29-4-2022 (AN), 30-4-2022, 02-05-2022, 03-05-2022 and 07-05-2022. We value your esteemed service and continue to do so.

14/6/2022

Nodal Officer – IOC
G.P.C Periya

Chairman – IOC
G.P.C Periya

INDUSTRY ON CAMPUS (IOC)
GOVT. POLYTECHNIC COLLEGE
PERIYA KASARGOD KERALA 671320

Dr. LEENA A.V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

DEPARTMENT OF MECHANICAL ENGINEERING
NBA accredited B.Tech & M.Tech Programs
GOVERNMENT ENGINEERING COLLEGE
KOZHIKODE – 673 005, KERALA, INDIA
(Department of Technical Education – Govt. of Kerala)
Approved by AICTE & Affiliated to the APJ Abdul Kalam Technological University

Office : +91 495 2383220 E-mail : hodme@geckkd.ac.in
Fax : +91 495 2383210 Website : www.geckkd.ac.in

DUTY CERTIFICATE

This is to certify that Prof. Jacob Thomas, Assistant Professor & H.O.D, Department of Mechanical Engineering, Sree Narayana Guru College of Engineering and Technology, has attended duty at this department as a resource person for conducting the Short-term training programme on CNC Milling machine from 21- 23rd August 2023.

Kozhikode,

23.08.2023

Dr. Pradeep M Kamath

Professor & Head

Head
Department of Mechanical Engineering
Government Engineering College Kozhikode
West Hill,Kozhikode- 673005, Kerala

DEPARTMENT OF MECHANICAL ENGINEERING
WEST HILL
KOZHIKODE - 673 005
KERALA, INDIA
GOVERNMENT ENGINEERING COLLEGE

Dr. LEENA. A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

BBD UNIVERSITY

IEEE Computational Intelligence Society
Uttar Pradesh Section

Babu Banarasi Das University

Department of Computer Science & Engineering, School of Engineering

CERTIFICATE

This certificate is awarded to

Dr. Raji Sukumar

SNG College of Engineering, KTU, INDIA

for his contribution as a **Resource Person** to deliver an expert talk in **One Week Faculty Development Program on Artificial Intelligence for Sustainable Development** held during October 03-07, 2023, organized by the Department of Computer Science and Engineering, School of Engineering, Babu Banarasi Das University.

No. BBDU_10_23/065

PKShukla

Dr. Praveen K. Shukla
Dean, School of Engineering, BBD University

THEJUS ENGINEERING COLLEGE

(ISO 9001-2015 certified Institution)
(Promoted by Cheruvathoor Foundation)
Approved by AICTE & Affiliated to APJ Abdul Kalam Technological University
Vellarakkad P.O., Thrissur, Kerala - 680584
Tel : 04885 260100
www.thejusengg.ac.in e mail: info@thejusengg.com

Date: 29/09/2023

To whomsoever it may concern

This is to certify that **Mr. Shyaman V P.** Assistant Professor in Mathematics at Sree Narayana Guru College of Engineering and Technology, Payyanur, conducted an introductory session on **"Unlocking the Power of LaTeX: A Comprehensive Introduction"** for final year B. Tech. students at Thejus Engineering College, Thrissur, on 29th September 2023.

This certificate recognizes Mr. Shyaman V P's valuable contribution as a resource person for the session, showcasing his professionalism, expertise, and dedication. His involvement greatly enriched the knowledge of the students, added significant value to the teaching learning process of Thejus Engineering College, Thrissur.

We express our gratitude to Mr. Shyaman V P for his exceptional efforts in promoting academic excellence through this informative session.

THEJUS ENGEERING COLLEGE THRISSUR 680584 VELLARKKAD

Principal

Principal
Thejus Engineering College
Vellarakkad P. O, Erumapetty
Thrissur-680584

GOVERNMENT OF KERALA

AGRICULTURE DEVELOPMENT AND FARMER'S WELFARE DEPARTMENT

Regional Agricultural Technology Training Centre, Karimbam, Taliparamba – 670142
Ph: 0460 2203151

CERTIFICATE

This is to certify that Dr.Raji Sukumar.A, Associate Professor, Department of Computer Science, Sreenarayana Guru College of Engineering and Technology has taken a one day session on Artificial Intelligence in Plant Protection on 06.12.2023.

DEPUTY DIRECTOR OF AGRICULTURE RATTC, TALIPARAMBA Pin 670 142

Place : Karimbam

Deputy Director of Agriculture

GOVERNMENT POLYTECHNIC COLLEGE, KANNUR

THOTTADA P.O, PIN: 670007

Phone: 0497-2835106, Fax : 0497-2836310

Email: kannurgptc@gmail.com

No:E1/Misc/2023 Date:30.11.2023

ATTENDANCE CERTIFICATE

This is to Certified that Sri.Jacob Thomas, Asst. Professor. In Mechanical Engineering, Sree Narayana College Of Engineering and Technology Payyannur has attended duty at this institution as software inspection service of CNC Machine in Mechanical Workshop on 30/11/2023

Principal

പ്രിൻസിപ്പാൾ
ഗവ.പോളിടെക്നിക് കോളേജ്
തോട്ടട പി.ഒ., കണ്ണൂർ-670 00

To

Sri.Jacob Thomas,
Asst. Professor. In Mechanical Engineering
Sree Narayana College Of Engineering
and Technology Payyannur

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

KERALA AGRICULTURAL UNIVERSITY

REGIONAL AGRICULTURAL RESEARCH STATION, PILICODE
KASARAGOD-671310, 0467 2260632, rarspil@kau.in

B1-5124/2023 Dated: 12.12.2023

CERTIFICATE OF PARTICIPATION

This is to certify that Dr.Raji Sukumar.A, Associate Professor SNGCET, Payyanur participated as a resource person in Agro conclave 4.0, 2023 with the topic "Possibilities of Empowerment in farming innovation and entrepreneurship" held in this station on August 18, 2023.

Pilicode
12.12 .2023

Dr.Vanaja T
Associate Director

OFFICE OF THE ASSOCIATE DIRECTOR
REGIONAL AGRL. RESEARCH STATION (KZ)
Date.....
PILICODE-671310

ST ALOYSIUS COLLEGE (AUTONOMOUS)
Institute of Management and IT - AIMIT
ESTD : 1880
Re-accredited by NAAC with A++ grade with 3.67 CGPA
Recognised by UGC as "College with Potential for Excellence"
College with 'STAR STATUS' conferred by DBT, Govt. of India
Tel : Office : 0824-2286881 / 2286882
Ph : 9141201851/ 9141201852
Email : office@staloysius.ac.in
Website : www.staloysius.ac.in
www.aimit.edu.in

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Dr RAJI SUKUMAR A** Associate Professor, SNGCET, Payyannur has given a session as a resource person one day Workshop with the "Possibilities of Empowerment with Innovation and Design Thinking," on 18th Nov '23.

Dr Hemalatha N.
Dean (Academics)

November 29, 2023

AIMIT
ST. ALOYSIUS COLLEGE
KOTEKAR POST, MADOOR
MANGALORE-575 022

Dean
Department of IT
AIMIT
ST ALOYSIUS COLLEGE (AUTONOMOUS)
BEERI, KOTEKAR POST
MANGALURU- 575 022

Government of Kerala
Department of Technical Education

MAHARAJA'S TECHNOLOGICAL INSTITUTE

Chembukavu - Thrissur, Kerala - 680020
www.mtithrissur.ac.in. mtithrsr@gmail.com PH - 0487-2333290

DUTY CERTIFICATE

Sri. Jacob Thomas,Assistant Professor of Mechanical Engineering, Sree Narayana Guru College of Engineering Technology, Chelakkode (P.O), Payannur, Kannur was present at this institution for conducting a training on CNC Lathe on 21/12/2023 and 22/12/2023 .

Thrissur
22-12-2023

MAHARAJA'S TECHNOLOGICAL INSTITUTE * THRISSUR-20. *

Principal
PRINCIPAL
Maharaja's Technological
Institute Thrichur-20

GOVERNMENT POLYTECHNIC COLLEGE, CHELAKKARA
(Under Directorate of Technical Education, Kerala)
THONOORKKARA P.O., THRISSUR, KERALA – 680 586
gptcchelakkara@gmail.com www.gpcchelakkara.ac.in 04884 254484

Dated: 16 –02-2024

CERTIFICATE OF APPRECIATION

This is to certify that Dr. Sudhin Chandran, Associate Professor, Department of Mechanical Engineering, Sree Narayana Guru College of Engineering & Technology, Payyanur has delivered a webinar session in connection with Student Empowerment & Training (SET), conducted by Department of Mechanical Engineering on the topic "Design of Experiments" on the AN of 03 –02 - 2024.

Principal

Principal
Govt. Polytechnic College
Chelakkara,
Thonoorkara P O., 680 5[illegible]

To,
Dr. Sudhin Chandran
Associate Professor
Department of Mechanical Engineering
Sree Narayana Guru College of Engineering & Technology
Payyanur, Kannur, Kerala

PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY
KANNUR

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Tel : Office : 0824-2286661 / 2286662
Ph : 9141201651/52/55
Email : office@staloysius.ac.in
Website : www.staloysius.ac.in
www.aimit.edu.in

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Dr. Raji Sukumar A, Associate Professor, SNGCET, Payyannur has graciously served as a resource person

for the "Crafting a Lean Canvas: A Crucial Step in Entrepreneurship" workshop held on 15th February 2024.

Your expertise and insights have enriched the learning experience of all participants present.

Dr Hemalatha N

Dean, Academics

AIMIT, St Aloysius (Deemed to be University)

Beeri, Kotekar

Managalore - 575022

AIMIT
ST. ALOYSIUS COLLEGE
BEERI, KOTEKAR POST, MANGALORE
MANGALORE-575 022

Date : 27.02.2024

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Tel : Office : 0824-2286881 / 2286882
Ph : 9141201851/52/55
Email : office@staloysius.ac.in
Website : www.staloysius.ac.in
www.aimit.edu.in

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Dr Raji Sukumar A,** Associate Professor, SNGCET, Payyanur has given a session as a resource person on the topic "MVP Canvas for Entrepreneurship" on 6th Jan '2024.

24/1/24

Dr Hemalatha N
Dean (Academics)

January 24, 2024

Campuzon

April 16, 2022

TO WHOM IT MAY CONCERN

This is to certify that **Mr. VAISHAKH M NAYANAR** has been working as an Instructor with Campuzon for the past **1 year**. He has been creating study material and engaging with students in live online classes on various subjects in the field of **Electrical and Electronics Engineering**.

Mr. Vaishakh has a keen interest in providing knowledge to the students in a very friendly manner and in a sincere way. His teaching methods had always the certainty to offer the most reliable way of catering to concepts and also his overall behavior with the students and other members of our team are praiseworthy. His contribution to our app is invaluable.

We, from Campuzon, wish him all the best for his future.

Sincerely,

Athul Krishna
Chief Operating Officer

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

+91 9496572413
athul@campuzon.com
Thiruvananthapuram, Kerala
www.campuzon.com

SREE NARAYANA GURU
COLLEGE OF ENGINEERING & TECHNOLOGY

(PROMOTED BY SREE BHAKTHI SAMVARDHINI YOGAM, KANNUR)
CHALAKODE P.O., PAYYANUR, KANNUR-670307, KERALA

DEPARTMENT OF CIVIL ENGINEERING
INTERNSHIP DETAILS

ACADEMIC YEAR 2022-2023

Sl.no	Name	Industry	Duration
1	ABHIJITHA	NEXORA	21-10-2022 TO 25-10-2022
2	AKSHAYA PV	NIRMITHIKENDRA	22-10-2022 TO 25-10-2022& 29-10-2022
3	ALEN ALEX	NEXORA	21-10-2022 TO 25-10-2022
4	AMAYA T	NEXORA	21-10-2022 TO 25-10-2022
5	ANUVINDA P	NEXORA	21-10-2022 TO 25-10-2022
6	APARNA P	NEXORA	21-10-2022 TO 25-10-2022
7	ARJUN KM		
8	FATHIMATHUL MARJAN	NEXORA	21-10-2022 TO 25-10-2022
9	FATHIMATH ZUHRA		
10	FIZA FARHEEN	NEXORA	21-10-2022 TO 25-10-2022
11	KEERTHANA SURENDRAN	NEXORA	21-10-2022 TO 25-10-2022
12	MOOHAMMED EBRAHIM	NEXORA	21-10-2022 TO 25-10-2022
13	RAJATH MANOHARAN	NEXORA	21-10-2022 TO 25-10-2022
14	SAJJAD ZAINUDHEEN	NEXORA	21-10-2022 TO 25-10-2022
15	SHAHANA SHERIN	NEXORA	21-10-2022 TO 25-10-2022
16	SREELAKSHMI K	NEXORA	21-10-2022 TO 25-10-2022
17	SREEVISHNU K	NEXORA	21-10-2022 TO 25-10-2022

DR. LEENA. A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR, KANNUR

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CHALAKODE P.O., PAYYANUR, KANNUR-670307, KERALA

DEPARTMENT OF CIVIL ENGINEERING

INTERNSHIP DETAILS

18	VAISHNAVI N K	NEXORA	21-10-2022 TO 25-10-2022
19	VYSHNA K	NEXORA	21-10-2022 TO 25-10-2022
20	ANUPRIYA K	NEXORA	21-10-2022 TO 25-10-2022

Dr. LEENA. A. V.
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SREENARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HOD CE

NEXORA

INTERNSHIP TRAINING ACADEMY

Certificate of Excellence

FILE NO 1841 REG NO 22NA/INC1026

This is to certify that MOOHAMMED EBRAHIM has successfully completed the internship program on the basis CIVIL ENGINEERING practised in CONSTRUCTION PROJECT MANAGEMENT section of the prime industry 21/10/2022 TO 25/10/2022 and have also been awarded with EXCELLENT the evaluvet and curriculum.

DATE OF ISSUE 25/10/2022

AUSMAL SALIM

COURSE COORDINATOR

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

INTERNSHIP INVIGILATOR

NEXORA

INTERNSHIP TRAINING ACADEMY

AN ISO 9001:2015 CERTIFIED

Certificate of Excellence

FILE NO 1839

REG NO : 22NA/INC1026

This is to certify that **SAJJAD ZAINUDHEEN** has successfully completed the internship program on the basis **CIVIL ENGINEERING** specialised in **CONSTRUCTION PROJECT MANAGEMENT** section of the prime industry **21/10/2022 TO 25/10/2022** and have also been awarded with **EXCELLENT** the conduct and curriculam.

DATE OF ISSUE : 25/10/2022

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

COURSE COORDINATOR

INTERNSHIP INVIGILATOR

NEXORA

INTERNSHIP TRAINING ACADEMY

Certificate of Excellence

FILE NO 1844

REG NO 22NA/INC1031

This is to certify that KEERTHANA SURENDRAN has successfully completed the internship program on the basis CIVIL ENGINEERING presented in CONSTRUCTION PROJECT MANAGEMENT section of the prime industry 21/10/2022 TO 25/10/2022 and have also been awarded with EXCELLENT the resultant and appreciation

DATE OF ISSUE 25/10/2022

AJMAL SALIM

COURSE COORDINATOR

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

INTERNSHIP INVIGILATOR

Certificate of Excellence

FILE NO 1836

REG NO : 22NA/INC102

This is to certify that **VAISHNAVI N K** has successfully completed the internsh
program on the basis **CIVIL ENGINEERING** specialised in **CONSTRUCTION PROJEC**
MANAGEMENT section of the prime industry **21/10/2022 TO 25/10/2022** and have als
been awarded with **EXCELLENT** the conduct and curriculam.

DATE OF ISSUE : 25/10/2022

AJIMAL SALIM

COURSE COORDINATOR

INTERNSHIP & TRAINING ACADEMY
NEXORA

INTERNSHIP INVIGILATOR

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

NEXORA

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Certificate of Excellence

FILE NO : 1843

REG NO : 22NA/INC1030

This is to certify that **ANUVINDA P** has successfully completed the internship program on the basis **CIVIL ENGINEERING** specialised in **CONSTRUCTION PROJECT MANAGEMENT** section of the prime industry **21/10/2022 TO 25/10/2022** and have also been awarded with **EXCELLENT** the conduct and curriculam.

Dr. LEENA. A. V.
PRINCIPAL
[illegible] COLLEGE OF
[illegible] TECHNOLOGY, PAYYANUR
KANNUR

DATE OF ISSUE : 25/10/2022

AJIMAL SALIM

COURSE COORDINATOR

INTERNSHIP INVIGILATOR

BM|CERT eiac IAF QRO EGAC Skill India NSDC

NEXORA

INTERNSHIP TRAINING ACADEMY

(AN ISO 9001:2015 CERTIFIED)

Certificate of Excellence

FILE NO 1840

REG NO 22NA/INC1027

This is to certify that **ABHIJITHA K** has successfully completed the internship program on the basis **CIVIL ENGINEERING** specialised in **CONSTRUCTION PROJECT MANAGEMENT** section of the prime industry **21/10/2022 TO 25/10/2022** and have also been awarded with **EXCELLENT** the conduct and curriculam.

DATE OF ISSUE 25/10/2022

AJIMAL SALIM

COURSE COORDINATOR

Dr. LEENA. A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

INTERNSHIP INVIGILATOR

NEXORA

INTERNSHIP TRAINING ACADEMY

(AN ISO 9001:2015 CERTIFIED)

Certificate of Excellence

FILE NO : 1842

REG NO : 22NA/INC1029

This is to certify that **ALEN ALEX** has successfully completed the internship program on the basis **CIVIL ENGINEERING** specialised in **CONSTRUCTION PROJECT MANAGEMENT** section of the prime industry **21/10/2022 TO 25/10/2022** and have also been awarded with **EXCELLENT** the conduct and curriculam.

DATE OF ISSUE : 25/10/2022

AJIMAL SALIM

COURSE COORDINATOR

INTERNSHIP INVIGILATOR

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FILE NO : 1852

REG NO : 22NA/INC1039

This is to certify that **AMAYA T** has successfully completed the internship program on the basis **CIVIL ENGINEERING** specialised in **CONSTRUCTION PROJECT MANAGEMENT** section of the prime industry **21/10/2022 TO 25/10/2022** and have also been awarded with **EXCELLENT** the conduct and curriculam.

DATE OF ISSUE : 25/10/2022

AJIMAL SALIM

COURSE COORDINATOR

INTERNSHIP & TRAINING ACADEMY NEXORA ACADEMY

INTERNSHIP INVIGILATOR

NEXORA

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Certificate of Excellence

FILE NO : 1838

REG NO : 22NA/INC1025

This is to certify that APARNA P has successfully completed the internship program on the basis CIVIL ENGINEERING specialised in CONSTRUCTION PROJECT MANAGEMENT section of the prime industry 21/10/2022 TO 25/10/2022 and have also been awarded with EXCELLENT the conduct and curriculam.

DATE OF ISSUE : 25/10/2022

AJIMAL SALIM

COURSE COORDINATOR

Dr. LEENA A. V.
PRINCIPAL
GOVERNMENT COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

INTERNSHIP INVIGILATOR

NEXORA

INTERNSHIP TRAINING ACADEMY

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Certificate of Excellence

FILE NO : 1846

REG NO : 22NA/INC1033

This is to certify that FATHIMATHUL MARJAN has successfully completed the internship program on the basis CIVIL ENGINEERING specialised in CONSTRUCTION PROJECT MANAGEMENT section of the prime industry 21/10/2022 TO 25/10/2022 and have also been awarded with EXCELLENT the conduct and curriculam.

DATE OF ISSUE : 25/10/2022

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COURSE COORDINATOR

INTERNSHIP INVIGILATOR

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INTERNSHIP TRAINING ACADEMY

Certificate of Excellence

FILE NO : 1847

REG NO : 22NA/INC1034

This is to certify that **FIZA FARHEEN** has successfully completed the internship program on the basis **CIVIL ENGINEERING** specialized in **CONSTRUCTION PROJECT MANAGEMENT** section of the prime industry **21/10/2022 TO 25/10/2022** and have also been awarded with **EXCELLENT** the conduct and curriculum.

ATE OF ISSUE : 25/10/2022

AJIMAL SALIM

URSE COORDINATOR

INTERNSHIP INVIGILATOR

NEXORA

INTERNSHIP TARINING ACADEMY

AN ISO 9001:2015 CERTIFIED

Certificate of Excellence

FILE NO : 1848

REG NO : 22NA/INC1035

This is to certify that **RAJATH MANOHARAN** has successfully completed the internship program on the basis **CIVIL ENGINEERING** specialised in **CONSTRUCTION PROJECT MANAGEMENT** section of the prime industry **21/10/2022 TO 25/10/2022** and have also been awarded with **EXCELLENT** the conduct and curriculam.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

DATE OF ISSUE : 25/10/2022

AJIMAL SALIM

COURSE COORDINATOR

INTERNSHIP INVIGILATOR

NEXORA

INTERNSHIP TRAINING ACADEMY

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Certificate of Excellence

FILE NO : 1857

REG NO : 22NA/INC1044

This is to certify that **SHAHANA SHERIN** has successfully completed the internship program on the basis **CIVIL ENGINEERING** specialised in **CONSTRUCTION PROJECT MANAGEMENT** section of the prime industry **21/10/2022 TO 25/10/2022** and have also been awarded with **EXCELLENT** the conduct and curriculam.

DATE OF ISSUE : 25/10/2022

INTERNSHIP & TRAINING ACADEMY NEXORA ACADEMY

COURSE COORDINATOR

INTERNSHIP INVIGILATOR

NEXORA

INTERNSHIP TRAINING ACADEMY

(AN ISO 9001:2015 CERTIFIED)

10

Certificate of Excellence

FILE NO 1851

REG NO 22NA/INC1038

This is to certify that SREELAKSHMI K has successfully completed the internship program on the basis CIVIL ENGINEERING specialised in CONSTRUCTION PROJECT MANAGEMENT section of the prime industry 21/10/2022 TO 25/10/2022 and have also been awarded with EXCELLENT the conduct and curriculam.

DATE OF ISSUE : 25/10/2022

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COURSE COORDINATOR

INTERNSHIP INVIGILATOR

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Certificate of Excellence

FILE NO : 1850

REG NO : 22NA/INC1037

This is to certify that **ANUPRIYA K** has successfully completed the internship program on the basis **CIVIL ENGINEERING** specialised in **CONSTRUCTION PROJECT MANAGEMENT** section of the prime industry **21/10/2022 TO 25/10/2022** and have also been awarded with **EXCELLENT** the conduct and curriculam.

DATE OF ISSUE : 25/10/2022

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COURSE COORDINATOR

INTERNSHIP & TRAINING ACADEMY NEXORA ACADEMY

INTERNSHIP INVIGILATOR

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INTERNSHIP TRAINING ACADEMY

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Certificate of Excellence

FILE NO : 1849

REG NO : 22NA/INC1036

This is to certify that SREEVISHNU has successfully completed the internship program on the basis CIVIL ENGINEERING specialised in CONSTRUCTION PROJECT MANAGEMENT section of the prime industry 21/10/2022 TO 25/10/2022 and have also been awarded with EXCELLENT the conduct and curriculam.

DATE OF ISSUE : 25/10/2022

AJIMAL SALIM

COURSE COORDINATOR

INTERNSHIP & TRAINING ACADEMY NEXORA ACADEMY

Dr. LEENA A. V.
PRINCIPAL

INTERNSHIP INVIGILATOR

BHCERT eiac IAF QRO EGAC Skill India NSDC

NEXORA

INTERNSHIP TRAINING ACADEMY

Certificate of Excellence

FILE NO : 1837

REG NO 22NA/INC1024

This is to certify that **VYSHNA K** has successfully completed the internship program on the basis **CIVIL ENGINEERING** specialised in **CONSTRUCTION PROJECT MANAGEMENT** section of the prime industry **21/10/2022 TO 25/10/2022** and have also been awarded with **EXCELLENT** the conduct and carriculam.

DATE OF ISSUE : 25/10/2022

AJIMAL SALIM
COURSE COORDINATOR

INTERNSHIP INVIGILATOR

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www.kannurnirmithi.kerala.gov.in
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KANNUR DISTRICT

NIRMITHI KENDRA

GUNDERT ROAD, THALASSERY- Pin 670101

A Building Centre for cost Effective Building Materials & Techniques
(Sponsored by HUDCO- Govt.of India & Govt. of Kerala)

KNK/122/2022(1)

11th November 2022

CERTIFICATE

This is to certify that Ms. Akshaya P V, 5th Semester B Tech student (Civil Engineering- University registration number SNC20CE002), of Sree Narayana Guru College Of Engineering & Technology, Payyannur has undergone internship in this establishment, as part of their curriculum, from 22-10-2022 to 25-10-2022 and on 29-10-2022. She has visited the following work sites.

1. Construction of Building for Village office at Vellur
2. Construction of Building for Govt. LP School , Mathamangalam
3. Construction of Migrant labour ward Building at CHC Payyangadi
4. SC colony development works at Kookkanam, Payyannur

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

INTERNSHIP REPORT

An internship Report submitted in partial fulfilment of the requirement for the evaluation process

Of

BACHELOR OF TECHNOLOGY

In

CIVIL ENGINEERING

Submitted by

AKSHAYA P V (Reg.No: SNC20CE002)

DEPARTMENT OF CIVIL ENGINEERING

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

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Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

INTRODUCTION

Engineering is the professional art of applying science to the optimum conversion of the resources of the nature to benefit man. As a career oriented applied education, Civil Engineering students internship program bridges the gap between theory and practise and provide students with practical, field based and real world experiences during their years of study.

Internship program is an opportunity for the students as a site engineer to supervise the construction work closely as a Design

Engineer to use software programs. In practical training, one learns to determine quantities of materials and learn the important rule of engineer's life i.e. 'Think Globally but Act Locally".

AIM- The aim of this report is to apprise concerned tutor about the practical experience gained by students from ongoing internship activities.

Duration of training -

Internship program started from date :- 22/10/2022 to 29/10/2022

Internship done under -

NIRMITHI KENDRA THALASSERY

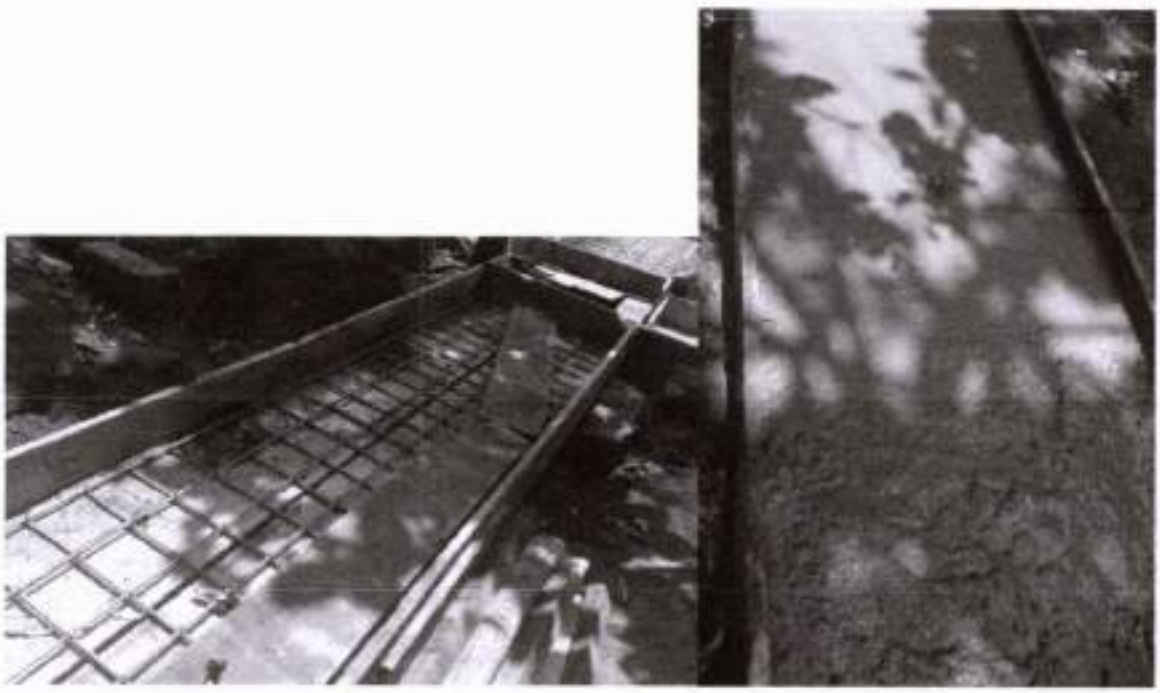
DAY 1 - VELLUR VILLAGE OFFICE SITE

Village office work using dust quality laterite stone. Cement motor sand or Plastering sand. Vitrified tile is used for floor finishing This tiles harden and become weatherproof, so use them both indoors and outdoors. The dimension of the vitrified tile is 600 mm x 600 mm.

Compound wall constructed using laterite stone. The laterite stones as such do not come in a defined dimension. The size of the laterite stone block varies depending upon the locality, cutting Process. The available sizes below 15" x 9"x 6" etc. The laterite stone for Wall 300 x 150 x 20mm. Piller is made to give support for compound wall and the pillar gap dimension is 3m.

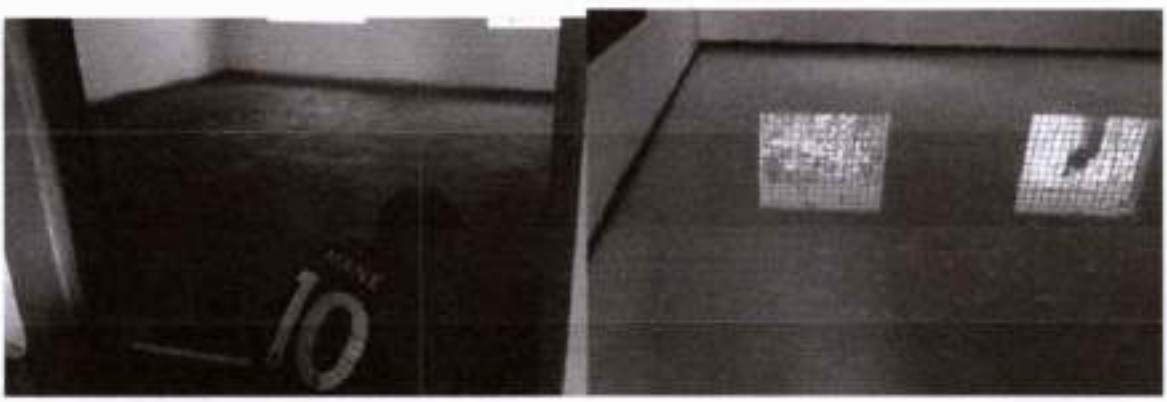
DAY 2 - KOOKANAM DRAINAGE

In a drainage construction work, the Plain coment Concrete (PCC) is used to the base. The width of the base of drainage is 90cm and the ratio is 1:5:10. The thickness of the slab is 10 cm. The column of the drainage used to constructed by PCC. The thickness of the column is 20cm and the wall height is 40 cm. The distance between the walls are 50 cm. The cover slab of the drainage is constructed by Reinforced cement concrete. (RCC). The thickness of the cover slab is 20mm. The mild steel is used at 10mm bar. When the water content is increases the strength is decreases.



DAY 3 - MATHAMANGALAM GLP SCHOOL TILE WORK

The tiling steps is a unique way to brighten up a hallway or out door area, here we provide a Practical solution to help it. In wall work the Ceramic tile is used. and the floor work is used Vitrified tile. First measure the area. Measure length and width of each step are going to tile with tape measure, don't forget to include the vertical length of the risers, these are the back Surfaces that make the stairs ascend, Facing your Feet. The concrete must be at least 6 weeks old to enable movement, caused by drying shrinkage, to have taken place. The concrete must be flat, clean, dry and Free from dust. Internal wooden stairs is the next work for tiling. Tiles can be fixed to almost all flooring substrates as long as they are properly prepared. The floor must suitably level. As well as removing the deflection from the stairs you may need to reinforce the stairs themselves to handle the additional weight of the tiles. The next step is grouting. The matching Silicone available to complete the perimeter expansion Joint. Next clean the tiles.



DAY 4 - MATHAMANGALAM GLP SCHOOL COMPOUND WALL WORK

The masonry compound wall is the most used one now a days. The laterite masnory are used For the work. The first step in constructing a compound wall is defining the boundary. Setout is done to mark the property boundary. Then the earth excavation is done. This is followed by a RCC belt. Next step is to do the block work. The wall will be adversely impacted if the length of the wall exceeds 8 Feet. Therefor pillars are needed in between the wall. So provide pillars at a gap of every 8 Feet. The normal height of a compound wall is 4 Ft - 6 Ft. The wall is then painted.

DAY 5 - TALUK HOSPITAL PAZHAYANGADI GLASS WORK

The structural glazing work is done. It is the innovative building material that takes advantage of all modern technology has to offer. The specially reinforced glass used is strong enough to walk on and bear Its own weight, and the flexible silicone adhesive provides a smooth. The ACP cladding systems is used. ACP panels are typically 4mm to 6mm thick and consist of core material between two thin layers of Aluminium. The core generally 3mm to 5mm thick with the Aluminium sheets each at 0.5 mm thick. ACP means Aluminium composite panel. It is used building front elevation. It contain durability, weather and strain-resistant

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KNK/122/2022(1)

11th November 2022

CERTIFICATE

This is to certify that Ms. Akshaya P V, 5th Semester B Tech student (Civil Engineering- University registration number SNC20CE002), of Sree Narayana Guru College Of Engineering & Technology, Payyannur has undergone internship in this establishment, as part of their curriculum, from 22-10-2022 to 25-10-2022 and on 29-10-2022. She has visited the following work sites.

1. Construction of Building for Village office at Vellur
2. Construction of Building for Govt. LP School , Mathamangalam
3. Construction of Migrant labour ward Building at CHC Payyangadi
4. SC colony development works at Kookkanam, Payyannur

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

SREE NARAYANA GURU
COLLEGE OF ENGINEERING & TECHNOLOGY

(PROMOTED BY SREE BHAKTHI SAMVARDHINI YOGAM, KANNUR)
CHALAKODE P.O., PAYYANUR, KANNUR-670307, KERALA

DEPARTMENT OF CIVIL ENGINEERING
INTERNSHIP DETAILS

ACADEMIC YEAR 2021-2022

Sl. No.	Name	Industry	Duration
1	AYSHA NASREEN	INSTA BUILDERS & DEVELOPERS	23/12/2021-11/01/2022
2	SAFIYATH APV	INSTA BUILDERS & DEVELOPERS	23/12/2021-11/01/2022
3	MOHAMMED NIHAD PV	INSTA BUILDERS & DEVELOPERS	23/12/2021-11/01/2022
4	SAFWAN HARIS	INSTA BUILDERS & DEVELOPERS	23/12/2021-11/01/2022
5	NANDITHA BABU	NEXORA	26/12/2021-01/01/2022
6	FATHIMATHUL SANA CC	NEXORA	26/12/2021-01/01/2022
7	SAFA AMEER	NEXORA	23/09/2021-25/09/2021
8	ABHIYUKTHA PV	NEXORA	15/09/2021-20/09/2021
9	AMAL PR	NEXORA	15/09/2021-20/09/2021
10	DRISHYA PV	D'MAKERS INTERIOR ARCHITECTURAL CONSULANT	04/10/2021-08/10/2021
11	ASHMITH KP	LIBRARY BLOCK OF GEC KANNUR	27/09/2021-06/10/2021
12	ARJUN DEV	LIBRARY BLOCK OF GEC KANNUR	27/09/2021-06/10/2021
13	PRANAV V	LIBRARY BLOCK OF GEC	27/09/2021-

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR KANNUR

SREE NARAYANA GURU
COLLEGE OF ENGINEERING & TECHNOLOGY

(PROMOTED BY SREE BHAKTHI SAMVARDHINI YOGAM, KANNUR)
CHALAKODE P.O., PAYYANUR, KANNUR–670307, KERALA

DEPARTMENT OF CIVIL ENGINEERING
INTERNSHIP DETAILS

	PRAKASH	KANNUR	06/10/2021
14	SREEMAI BAIJU	LIBRARY BLOCK OF GEC KANNUR	27/09/2021-04/10/2021
15	AKSHAY KRISHNAN	LIBRARY BLOCK OF GEC KANNUR	27/09/2021-04/10/2021
16	RAHUL P	LIBRARY BLOCK OF GEC KANNUR	27/09/2021-04/10/2021
17	REVATHI K	NEXORA	15/09/2021-20/09/2021
18	MITHUNA VP	NEXORA	15/09/2021-20/09/2021
19	DRISHYA PV	D'MAKERS INTERIOR ARCHITECTURAL CONSULANT	04/10/2021-08/10/2021
20	ASHMITH KP	LIBRARY BLOCK OF GEC KANNUR	27/09/2021-06/10/2021
21	ARJUN DEV	LIBRARY BLOCK OF GEC KANNUR	27/09/2021-06/10/2021
22	PRANAV V PRAKASH	LIBRARY BLOCK OF GEC KANNUR	27/09/2021-06/10/2021
23	SREEMAI BAIJU	LIBRARY BLOCK OF GEC KANNUR	27/09/2021-04/10/2021
24	SHIFANA MUHAMMED ASHRAF	NEXORA	23/09/2021-25/09/2021
25	MUHAMMED HANNAN	ZINDOT TECHNOLOGIES	27/11/2021-08/12/2021
26	ANANDHU ASHOK KP	ZINDOT TECHNOLOGIES	27/11/2021-08/12/2021

HOD

Dr. LEENA. A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

INSTA BUILDERS & DEVELOPERS

11/01/2022

CERTIFICATE

This is to certify that Aysha Nasreen, having the university register number : SNC18CE013, B.Tech Civil Engineering student of Sree Narayana Guru College of Engineering and Technology , Payyanur has successfully completed , internship program based on Structural Engineering and visited our work sites from 23/12/2021 to 11/01/2022.

For Insta Builders & Developers

HR Manager

INSTA BUILDERS & DEVELOPERS KERALA

Dr. LEENA. A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

3rd Floor, Rubber Gardens, Temple Road, Thrikkakara P.O., Kochi, Kerala-682 021, Ph: 9495950774

INSTA BUILDERS & DEVELOPERS

11/01/2022

CERTIFICATE

This is to certify that Safiyath APV, having the university register number : SNC18CE032, B.Tech Civil Engineering student of Sree Narayana Guru College of Engineering and Technology , Payyanur has successfully completed internship program based on Structural Engineering and visited our work sites from 23/12/2021 to 11/01/2022.

For Insta Builders & Developers

INSTA BUILDERS & DEVELOPERS KERALA

HR Manager

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

INSTA BUILDERS & DEVELOPERS

11/01/2022

CERTIFICATE

This is to certify that Mohammed Nihad PV, having the university register number : SNC18CE025, B.Tech Civil Engineering student of Sree Narayana Guru College of Engineering and Technology , Payyanur has successfully completed internship program based on Structural Engineering and visited our work sites from 23/12/2021 to 11/01/2022.

For Insta Builders & Developers

HR Manager

INSTA BUILDERS & DEVELOPERS KERALA

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

... Garden, Temple Road, Thrikkakara P.O. ... -682 021, ... 9465950...

INSTA BUILDERS & DEVELOPERS

11/01/2022

CERTIFICATE

This is to certify that Safvan Haris, having the university register number : SNC18CE033, B.Tech Civil Engineering student of Sree Narayana Guru College of Engineering and Technology , Payyanur has successfully completed internship program based on Structural Engineering and visited our work sites from 23/12/2021 to 11/01/2022.

For Insta Builders & Developers

INSTA BUILDERS & DEVELOPERS ★ KERALA

HR Manager

NEXORA

INTERNSHIP TRAINING ACADEMY

AN ISO 9001:2015 CERTIFIED

Certificate of Excellence

FILE NO : 1686

REG NO : 21NA/INC873

This is to certify that **NANDITHA BABU** has successfully completed the internship program on the basis **CIVIL ENGINEERING** specialised in **QUANTITY SURVEYING AND VALUATION** section of the prime industry **26/12/2021 to 01/01/2022** and have also been awarded with **EXCELLENT** the conduct and curriculam.

DATE OF ISSUE : 03/01/2022

COURSE CORDINATOR

INTERNSHIP & TRAINING ACADEMY NEXORA ACADEMY

Dr. LEENA A. V.
PRINCIPAL,
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

INTERNSHIP INVIGILATOR

NEXORA

INTERNSHIP TRAINING ACADEMY

(AN ISO 9001:2015 CERTIFIED)

Certificate of Excellence

FI NO : 1683

REG NO : 21NA/INC870

This is to certify that **FATHIMATHUL SANA C C** has successfully completed the internship program on the basis **CIVIL ENGINEERING** specialised in **QUANTITY SURVEYING AND VALUATION** section of the prime industry **26/12/2021 to 01/01/2022** and have also been awarded with **EXCELLENT** the conduct and curriculam.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANNUR
KANNUR

DATE OF ISSUE : 03/01/2022

COURSE CORDINATOR

INTERNSHIP & TRAINING ACADEMY
NEXORA
PUDUKKOTTAI

INTERNSHIP INVIGILATOR

T. P. PRAKASHAN

CPWD, PWD CONTRACTOR (A CLASS)

THEKKINIPURAYIL, THALIYIL,
P.O. KALLIASSERI-670 562.
KANNUR (DIST.), KERALA.
Mob: 9497294435

Ref.

Date.....

Ref: TPP/Certificate/2021-104

06/10/2021

TO WHOME IT MAY CONCERN

It is certified that **Mr. Ashmith K P** was under the employer of T P PRAKASHAN Contractor for the work "Construction of Library Block for Government Engineering College, Kannur" as an intern from 27/09/2021 to 06/10/2021.

During his stay we observe him obedient, honest and dedicated to his work

We hope and pray bright and good seed in his future life.

With Regards,

T. P. Prakaaan
A Class, PWD Contractor
Reg. No. 57 - A
Thekkinipurayil House, Thaliyil,
Kalliassery (PO), Kannur - 670 562

DR. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

tp.prakash099@gmail.com, tpconstructions.kannur@gmail.com

T. P. PRAKASHAN
CPWD, PWD CONTRACTOR (A CLASS)

THEKKINIPURAYIL, THALIYIL,
P.O. KALLIASSERI-670 562.
KANNUR (DIST.), KERALA.
Mob: 9497294435

Ref. *Date.....*

Ref: TPP/Certificate/2021-102

06/10/2021

TO WHOME IT MAY CONCERN

It is certified that **Mr. Arjun Dev** was under the employer of T P PRAKASHAN Contractor for the work "Construction of Library Block for Government Engineering College, Kannur" as an intern from 27/09/2021 to 06/10/2021.

During his stay we observe him obedient, honest and dedicated to his work

We hope and pray bright and good seed in his future life.

With Regards.

T. P. Prakasan
A Class PWD Contractor
Reg No. 57 - A
Thekkinipurayil House, Thaliyil,
Kalliassery (PO), Kannur - 670 562

tp.prakashan09@gmail.com, tpconstructions.kannur@gmail.com

PUBLIC WORKS DEPARTMENT

BUILDING SECTION,KANNUR

TRAINING CERTIFICATE

No.S1-1/2021

This is to certify that Ms.Sreemai Baiju (SNC18CE040) Civil Engineering student of Sreenarayana Guru College of Engineering & Technology,Chalakode,Payyannur, Kerala has undergone 5 days (Five days)Training at the sites of PWD Building Section Kannur (Construction of Library block for Govt.College of Engineering,Kannur) for the period from 27-09-2021 to 04-10-2021

This is also to certify that she has shown keen interest in work and her character and conduct were good during this period.

OFFICE OF THE ASSISTANT ENGINEER P.W.D. BUILDINGS SECTION
Date
KANNUR - 2

SUJITH KUMAR.C
ASSISTANT ENGINEER
P.W.D. BUILDINGS SECTION
KANNUR

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANNUR
KANNUR

T. P. PRAKASHAN

CPWD, PWD CONTRACTOR (A CLASS)

THEKKINIPURAYIL, THALIYIL,
P.O. KALLIASSERI-670 562.
KANNUR (DIST.), KERALA.
Mob: 9497294435

Ref. Ref: TPP/Certificate/2021-101

Date.....

06/10/2021

TO WHOME IT MAY CONCERN

It is certified that **Mr. Pranav V Prakash** was under the employer of T P PRAKASHAN Contractor for the work "Construction of Library Block for Government Engineering College, Kannur" as an intern from 27/09/2021 to 06/10/2021.

During his stay we observe him obedient, honest and dedicated to his work

We hope and pray bright and good seed in his future life.

With Regards,

T. P. Prakasan
A Class, PWD Contractor
Reg. No. 57 - A
Thekkinippurayil House, Thaliyil,
Kalliassery (PO), Kannur - 670 562

DR. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

tp.prakash099@gmail.com, tpconstructions.kannur@gmail.com

PUBLIC WORKS DEPARTMENT

BUILDING SECTION,KANNUR

TRAINING CERTIFICATE

No.S1-1/2021

This is to certify that Mr.Pranav V Prakash (SNC18CE027) Civil Engineering student of Sreenarayana Guru College of Engineering & Technology,Chalakode,Payyannur, Kerala has undergone 5 days (Five days)Training at the sites of PWD Building Section Kannur (Construction of Library block for Govt.College of Engineering,Kannur) for the period from 27-09-2021 to 04-10-2021

This is also to certify that he has shown keen interest in work and his character and conduct were good during this period.

OFFICE OF THE ASSISTANT ENGINEER P.W.D. BUILDINGS SECTION
Date
KANNUR - 2

SUJITH KUMAR.C
ASSISTANT ENGINEER
P.W.D. BUILDINGS SECTION
KANNUR

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANNUR
KANNUR

PUBLIC WORKS DEPARTMENT

BUILDING SECTION,KANNUR

TRAINING CERTIFICATE

No.S1-1/2021

This is to certify that Mr.Akshay Krishnan (SNC18CE004) Civil Engineering student of Sreenarayana Guru College of Engineering & Technology,Chalakode,Payyannur, Kerala has undergone 5 days (Five days)Training at the sites of PWD Building Section Kannur (Construction of Library block for Govt.College of Engineering,Kannur) for the period from 27-09-2021 to 04-10-2021

This is also to certify that he has shown keen interest in work and his character and conduct were good during this period.

SUJITH KUMAR.C
ASSISTANT ENGINEER
P.W.D. BUILDINGS SECTION
KANNUR

Dr. LEENA. A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY
PAYYANNUR

OFFICE OF THE ASSISTANT ENGINEER P.W.D. BUILDINGS SECTION
Date
KANNUR - 2

PUBLIC WORKS DEPARTMENT

BUILDING SECTION,KANNUR

TRAINING CERTIFICATE

No.S1-1/2021

This is to certify that Mr.Rahul.P (SNC18CE028) Civil Engineering student of Sreenarayana Guru College of Engineering & Technology,Chalakode,Payyannur,Kerala has undergone 5 days (Five days)Training at the sites of PWD Building Section Kannur (Construction of Library block for Govt.College of Engineering,Kannur) for the period from 27-09-2021 to 04-10-2021

This is also to certify that he has shown keen interest in work and his character and conduct were good during this period.

OFFICE OF THE ASSISTANT ENGINEER P.W.D. BUILDINGS SECTION KANNUR - 2

SUJITH KUMAR.C
ASSISTANT ENGINEER
P.W.D BUILDINGS SECTION
KANNUR

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANNUR
KANNUR

NEXORA
INTERNSHIP TRAINING ACADEMY
(AN ISO 9001:2015 CERTIFIED)

Certificate of Excellence

FILE NO : 1578

REG NO : 21NA/INC 755

This is to certify that **REVATHI . K** *has successfully completed the internship program on the basis* **QC IN CIVIL CONSTRUCTION** *specialised in* **RCC DETAILING AND BUILDING MATERIAL** *section of the prime industry* **15 SEP 2021 TO 20 SEP 2021** *and have also been awarded with* **EXCELLENT** *the conduct and curriculam.*

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

DATE OF ISSUE : 24 SEP 2021

AJIMAL SALIM
COURSE CORDINATOR

INTERNSHIP & TRAINING ACADEMY
NEXORA ACADEMY

INTERNSHIP INVIGILATOR

BMSCERT EGAC

NEXORA

INTERNSHIP TARINING ACADEMY

(AN ISO 9001:2015 CERTIFIED)

Certificate of Excellence

FILE NO : 1635

REG NO : 21NA/INC 820

This is to certify that SAFA AMEER has successfully completed the internship program on the basis CIVIL ENGINEERING specialised in BASICS OF QS AND ESTIMATION, KMBR & KPBR section of the prime industry 23 SEP 2021 TO 25 SEP 2021 He have also been awarded with EXCELLENT the conduct and curriculam.

DATE OF ISSUE : 27 SEP 2021

AJIMAL SALIM
COURSE CORDINATOR

INTERNSHIP & TRAINING ACADEMY
NEXORA ACADEMY

MANOJ KUMAR T K
INTERNSHIP INVIGILATOR

NEXORA

INTERNSHIP TRAINING ACADEMY

AN ISO 9001:2015 CERTIFIED

Certificate of Excellence

FILE NO : 1633

REG NO : 21NA/INC 818

This is to certify that **SHIFANA MUHAMMED ASHRAF** has successfully completed the internship program on the basis **CIVIL ENGINEERING** specialised in **BASICS OF QS AND ESTIMATION, KMBR & KPBR** section of the prime industry **23 SEP 2021 TO 25 SEP 2021** He have also been awarded with **EXCELLENT** the conduct and curriculam.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANNUR, KANNUR

DATE OF ISSUE : 27 SEP 2021

AJIMAL SALIM
COURSE CORDINATOR

INTERNSHIP & TRAINING ACADEMY NEXORA ACADEMY

MANOJ KUMAR T K
INTERNSHIP INVIGILATOR

IAF MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT

BMSCERT

ciac

RO

EGAC

TÜVRheinland CERTIFIED

NEXORA

INTERNSHIP TRAINING ACADEMY

AN ISO 9001:2015 CERTIFIED

Certificate of Excellence

FILE NO 1575

REG NO 21NA/INC 752

This is to certify that MITHUNA V . P has successfully completed the internship program on the basis QC IN CIVIL CONSTRUCTION specialised in RCC DETAILING AND BUILDING MATERIAL section of the prime industry 15 SEP 2021 TO 20 SEP 2021 and have also been awarded with EXCELLENT the conduct and curriculam.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY
KANNUR

DATE OF ISSUE : 24 SEP 2021

AJIMAL SALIM
COURSE CORDINATOR

INTERNSHIP & TRAINING ACADEMY
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MANOJ KUMAR T K
INTERNSHIP INVIGILATOR

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FILE NO : 1576

REG NO : 21NA/INC 753

This is to certify that **AMAL P . R** has successfully completed the internship program on the basis **QC IN CIVIL CONSTRUCTION** specialised in **RCC DETAILING AND BUILDING MATERIAL** section of the prime industry **15 SEP 2021 TO 20 SEP 2021** We have also been awarded with **EXCELLENT** the conduct and curriculam.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANNUR
KANNUR

DATE OF ISSUE : 24 SEP 2021

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REG NO : 21NA/INC 751

This is to certify that **ABHIYUKTHA P . V** has successfully completed the internship program on the basis **QC IN CIVIL CONSTRUCTION** specialised in **RCC DETAILING AND BUILDING MATERIAL** section of the prime industry **15 SEP 2021 TO 20 SEP 2021** and have also been awarded with **EXCELLENT** the conduct and curriculam.

Dr. LEENA A. V.
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DATE OF ISSUE : 24 SEP 2021

AJMAL SALIM
COURSE CORDINATOR

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INTERNSHIP INVIGILATOR

D'MAKERS

INTERIOR ARCHITECTURAL CONSULTANTS

1st floor, Royal City Complex, Main Road, Payyanur, Kannur - 670 307, Ph. 04985 209955, Mob: 09037109037

INTERNSHIP CERTIFICATE

To whom so ever it may concern!!!

This is to certify that Ms. Drishya P.V bearing Register No: SNC18CE015, 7th Semester Civil Engineering student of Sree Narayana Guru College of Engineering and Technology, Chalakode, Payyanur, Kannur Dist has undergone 5 Days Internship Program at our firm for the site of Residential Works at Pazhayangadi, Kannur from 04.10.2021 to 08.10.2021.

During this period, we found her interest for works, character and conduct is good and we wish her all the best for her future endeavors.

Date: 09.10.2021

Place: Payyanur

For D'Makers

OLD BUS STAND WEST
MAIN ROAD, PAYYANUR

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

Industrial Training

At

DMAKERS INTERIOR ARCHITECTURAL CONSULTANT

Submitted in partial fulfilment for the award of the degree of

Bachelor of Technology in Civil Engineering

Of

APJ Abdul Kalam Technological University

Submitted by

DRISHYA P V

DEPARTMENT OF CIVIL ENGINEERING

2021

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

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DEPARTMENT CIVIL ENGINEERING

BONAFIDE CERTIFICATE

This is to certify that Industrial Training at **"DMAKERS INTERIOR ARCHITECTURAL CONSULTANT"** *is a bonafide record of the work done by* **Ms. Drishya P V** *of seventh semester* ***Department of Civil Engineering*** *towards the partial fulfillment for the award of the degree of* **Bachelor of Technology** *by APJ Abdul Kalam Technological University*

Faculty Advisor

Department of CE

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

Head of the Department

Department of CE

INTRODUCTION

The internship in residential work presented an invaluable opportunity for a student from Sree Narayana Guru College of Engineering & Technology to immerse themselves in the construction industry. Over the span of five days, the intern was fully engaged in a diverse range of activities meticulously designed to deepen their comprehension of residential construction practices and techniques.

At the outset, the intern was introduced to the fundamental aspects of residential construction, laying the groundwork for their immersive learning experience. They were acquainted with the basic terminology, processes, and safety protocols essential for working in a construction environment. This initial phase provided the intern with a solid foundation upon which to build their understanding throughout the internship.

Throughout the internship, the intern actively participated in hands-on activities tailored to enhance their practical skills and knowledge. They were involved in various tasks, ranging from site preparation and foundation laying to structural framing and utility installation. Under the guidance of experienced professionals, the intern gained firsthand experience in using construction tools and equipment, as well as insights into the importance of precision and attention to detail in residential construction.

Moreover, the internship facilitated the intern's exposure to the intricacies of project management and quality assurance in residential construction projects. They learned about scheduling, budgeting, procurement, and quality control measures involved in managing such projects. Additionally, they had the opportunity to observe meetings with project stakeholders to discuss progress, challenges, and resolutions, providing them with insights into effective stakeholder management and communication skills.

Furthermore, the internship encouraged the intern to reflect on their experiences and contributions to the residential project. They actively participated in debriefing sessions with the project supervisor and team members, where they shared their observations, insights, and lessons learned. Feedback and guidance were provided.

Intern : Drishya P V

Training centre: DMAKERS INTERIOR ARCHITECTURAL CONSULTANT

Training Duration: 04-10-2021 to 08-10-2021

Institution: Sree Narayana Guru College of Engineering & Technology

DAY ONE

On the first day of the internship, the intern participated in an orientation session that served as an introduction to the internship program. During this session, they were provided with an overview of the objectives and expectations of the program. This included understanding the goals they were expected to achieve during their time at the residential construction site.

One of the key aspects of the orientation was the opportunity for the intern to meet with the project supervisor and other members of the construction team. This allowed them to establish initial connections and familiarize themselves with the individuals they would be working alongside throughout the internship.

A crucial component of the orientation was the comprehensive overview of the residential project. This involved gaining insight into various aspects of the project, such as its timeline, budget, and key milestones. Understanding these details provided the intern with context and clarity regarding the scope and objectives of the construction project they would be contributing to.

Furthermore, the orientation included an overview of the construction site safety protocols and procedures. Safety is paramount in any construction environment, and the intern was briefed on the necessary precautions and measures to ensure their well-being and the well-being of others on the site. This included information on the proper use of personal protective equipment (PPE), emergency procedures, and hazard identification.

Overall, the orientation session on the first day of the internship served as a comprehensive introduction to the internship program and the residential construction project. It provided the intern with essential information and insights that would guide their activities and interactions throughout the duration of the internship.

DAY TWO

On the second day of the internship, the intern was actively involved in hands-on activities related to residential construction. This immersive experience provided them with practical exposure to various aspects of the construction process. One of the primary tasks assigned to the intern was assisting the construction team with site preparation. This involved activities such as clearing debris, leveling the ground, and ensuring that the construction site was organized and ready for further work. By participating in site preparation, the intern gained insight into the initial stages of construction and the importance of proper groundwork for successful project execution.

Another significant task undertaken by the intern was assisting with foundation laying. This process involved excavating trenches, pouring concrete, and installing reinforcement materials to create a stable foundation for the building. Under the guidance of experienced workers, the intern learned about the technical aspects of foundation construction, including proper alignment, depth, and strength requirements. Additionally, the intern had the opportunity to participate in structural framing activities. This included assembling and erecting the structural framework of the building, such as walls, floors, and roof trusses. By working alongside experienced workers, the intern gained practical experience in using construction tools and equipment, such as hammers, nails, saws, and levels.

Throughout the day, the intern made observations and learned about the intricacies of the construction process. They gained an appreciation for the importance of precision and attention to detail in residential work, as even minor errors in measurements or alignment can have significant consequences for the structural integrity and overall quality of the building. Overall, the second day of the internship provided the intern with invaluable hands-on experience and practical insights into residential construction. By actively participating in site preparation, foundation laying, and structural framing activities, the intern gained a deeper understanding of the construction process and the skills required to contribute effectively to a construction project.

DAY THREE

During this phase of the internship, the emphasis was placed on deepening the understanding of residential construction techniques, particularly focusing on the installation of utilities and interior finishing techniques.

The intern had the opportunity to observe and participate in the installation of various utilities essential for residential buildings. This included plumbing, which involves the installation of pipes, fixtures, and fittings to ensure the proper distribution of water throughout the building. By observing skilled trades people at work, the intern gained insights into the layout, sizing, and connection of plumbing systems, as well as techniques for addressing common challenges such as leaks and clogs. Similarly, the intern learned about electrical wiring, which involves the installation of wiring, switches, outlets, and fixtures to provide electricity to the building. They observed the process of routing electrical cables, installing junction boxes, and connecting electrical components according to safety standards and building codes. Understanding electrical wiring is crucial for ensuring the safety and functionality of residential buildings.

Additionally, the intern gained insight into HVAC (Heating, Ventilation, and Air Conditioning) systems, which are essential for maintaining comfortable indoor environments. They learned about the installation of heating and cooling equipment, ductwork, and ventilation systems to regulate temperature, humidity, and air quality within the building. Observing the coordination and integration of different building systems, such as plumbing, electrical, and HVAC, provided the intern with a holistic understanding of residential construction. Furthermore, the intern had the opportunity to learn about interior finishing techniques, which are essential for enhancing the aesthetic appeal and functionality of residential spaces. This included drywall installation, which involves hanging and finishing gypsum panels to create smooth, seamless walls and ceilings. They also learned about flooring installation techniques, such as laying tiles, hardwood, or laminate flooring, to provide durable and attractive floor surfaces. Additionally, the intern gained insight into painting techniques, including surface preparation, priming, and applying paint coats to achieve desired colors and finishes.

Overall, this phase of the internship provided the intern with a comprehensive understanding of residential construction techniques, from the installation of utilities to interior finishing. By observing skilled trades people and actively participating in hands-on activities, they gained practical experience and valuable insights that will be invaluable in their future endeavors in the construction industry.

DAY FIVE

On the final day of the internship, the intern engaged in a reflection session to assess their experiences and contributions to the residential project. This session served as an opportunity for the intern to reflect on their journey throughout the internship and to share insights and lessons learned with their project supervisor and other team members.

During the debriefing session, the intern actively participated in discussions with the project supervisor and team members. They shared their observations, insights, and reflections on their experiences during the internship. This included discussing the challenges they faced, the skills they developed, and the achievements they accomplished throughout the duration of the internship.

Feedback and guidance were provided by the project supervisor and team members on areas for improvement and future growth in a career in the construction industry. This included constructive feedback on the intern's performance, as well as recommendations for further development and professional growth. The intern received valuable advice on how to build upon their strengths and address areas of weakness to excel in their future endeavors.

The debriefing session concluded with a sense of accomplishment and gratitude for the valuable learning experiences gained during the internship. The intern expressed appreciation for the opportunity to contribute to the residential project and to learn from experienced professionals in the construction industry. They left the internship with a renewed sense of motivation and confidence in their abilities, ready to apply their newfound knowledge and skills in their future career endeavors.

Overall, the final day of the internship provided a meaningful closure to the internship experience, allowing the intern to reflect on their journey, receive feedback and guidance, and express gratitude for the opportunities and experiences gained. It served as a pivotal moment for personal and professional growth, marking the culmination of a rewarding and transformative internship experience in the construction industry.

Dr. LEENA A V
PRINCIPAL
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ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

SREE NARAYANA GURU
COLLEGE OF ENGINEERING & TECHNOLOGY

(PROMOTED BY SREE BHAKTHI SAMVARDHINI YOGAM, KANNUR)
CHALAKODE P.O., PAYYANUR, KANNUR–670307, KERALA

DEPARTMENT OF CIVIL ENGINEERING
INTERNSHIP DETAILS
ACADEMIC YEAR 2020-2021

Sl. No.	Name	Industry	Duration
1	SHIFANA MUHAMMED ASHRAF	ZINDOT TECHNOLOGIES	05/08/2020-21/08/2020
2	HIBA FAROOK AYAR	ZINDOT TECHNOLOGIES	05/08/2020-21/08/2020
3	ABHIYUKTHA PV	MADECKAL CONSTRUCTIONS	27/05/2021-31/05/2021
4	ANJIMA BP	MADECKAL CONSTRUCTIONS	27/05/2021-31/05/2021
5	LAKSHMI RANJITH	MADECKAL CONSTRUCTIONS	27/05/2021-31/05/2021
6	AYSHA NASREEN	MADECKAL CONSTRUCTIONS	27/05/2021-31/05/2021

Susan Mathew
HOD

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

ZINDOT TECHNOLOGIES

zindot.com

CERTIFICATE

This is to certify that

HIBA FAROOK AYAR

student of

SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY

has completed 10 days internship training in **BUILDING FORENSICS** from 5th AUGUST 2020 at ZINDOT TECHNOLOGIES, Calicut. During this intern period, we found him/her a sincere, honest, hardworking, dedicated student with a professional attitude and very good professional knowledge.
We wish you every success in all future endeavours.

Date : 21th AUGUST 2020

Director
ZINDOT TECHNOLOGIES

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANNUR, KANNUR

ZINDOT TECHNOLOGIES
KOCHI-682 034

ZINDOT TECHNOLOGIES

zindot.com

CERTIFICATE

This is to certify that

SHIFANA MUHAMMED ASHRAF

student of

SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANNUR

has completed 15 days internship training in BUILDING FORENSICS from 5th AUGUST 2020 at ZINDOT TECHNOLOGIES, Kochi. During the intern period, we found him/her a sincere, honest, hardworking, dedicated student with a professional attitude and very good professional knowledge.
We wish you every success in all future endeavours.

Date : 21 AUGUST 2020

Director
ZINDOT TECHNOLOGIES

Dr. LEELA. A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANNUR
KANNUR

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CERTIFICATE

This is to certify that

ANANDHU ASHOK KP

student of

SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY

has completed 10 days internship training in **BUILDING FORENSICS** from 27th November 2021 at ZINDOT TECHNOLOGIES, Kochi. During this intern period, we found him/her a sincere, honest, hardworking, dedicated student with a professional attitude and very good professional knowledge.
We wish you every success in all future endeavours.

Date : 08 DECEMBER 2021

Director
ZINDOT TECHNOLOGIES

ZINDOT TECHNOLOGIES KOCHI-682 034

Dr. LEENA A. V.
PRINCIPAL
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CERTIFICATE

This is to certify that

MUHAMMED HANNAN

student of

SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY

has completed 10 days internship training in **BUILDING FORENSICS** from 27th November 2021 at ZINDOT TECHNOLOGIES, Kochi. During this intern period, we found him/her a sincere, honest, hardworking, dedicated student with a professional attitude and very good professional knowledge.
We wish you every success in all future endeavours.

Date : 08 DECEMBER 2021

Director
ZINDOT TECHNOLOGIES

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Dr. LEENA A. V.
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KANNUR

Semester - 2

ZINDOT TECHNOLOGIES

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CERTIFICATE

This is to certify that

SREEVISHNU K

student of

SNGCET PAYYANUR

has completed 10 days **internship training** in **BUILDING FORENSIC** from 4th September 2021 at ZINDOT TECHNOLOGIES, Kochi. During this intern period, we found him/her a sincere, honest, hardworking, dedicated student with a professional attitude and very good professional knowledge.
We wish you every success in all future endeavours.

Date : 15 SEPTEMBER 2021

Director
ZINDOT TECHNOLOGIES

ZINDOT TECHNOLOGIES KOCHI-682 034

Dr. [illegible] A. V.
[illegible]
[illegible] COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

MADECKAL CONSTRUCTIONS

Reg No: 2476/2007 Con. Reg. No. 47/BSC/E1/07-08, A Class

CERTIFICATE OF INTERNSHIP

awarded to

Anjima B P

from

Sree Narayana Guru College of Engineering And Technology

In recognition to his/her participation in 5 days online internship program on **Geotechnical Investigation and Buliding Construction** conducted by **Madeckal Constructions** from **27.05.2021 to 31.05.2021**

Date : 01.06.2021
Cert. ID : MCIN10325

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Vinoy Antony
Managing Partner
Madeckal Constructions
Bappuji Road, Muvattupuzha-686661

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CERTIFICATE OF INTERNSHIP

awarded to

Aysha Nasreen

from

Sree Narayana Guru College of Engineering And Technology

In recognition to his/her participation in 5 days online internship program on **Geotechnical Investigation and Building Construction** conducted by **Madeckal Constructions** from **27.05.2021 to 31.05.2021**

Date : 01.06.2021
Cert. ID : MCIN10522

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Vinoy Antony
Managing Partner
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MADECKAL CONSTRUCTIONS

Reg No: 2476/2007 Con. Reg. No. 47/BSC/E1/07-08, A Class

CERTIFICATE OF INTERNSHIP

awarded to

Laxmi Ranjith

from

Sree Narayana Guru College of Engineering And Technology

In recognition to his/her participation in 5 days online internship program on **Geotechnical Investigation and Buliding Construction** conducted by **Madeckal Constructions** from **27.05.2021 to 31.05.2021**

Date : 01.06.2021
Cert. ID : MCIN10886

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MADECKAL CONSTRUCTIONS

Reg No: 2476/2007 Con. Reg. No. 47/BSC/E1/07-08, A Class

CERTIFICATE OF INTERNSHIP

awarded to

Abhiyuktha P V

from

Sree Narayana Guru College of Engineering And Technology

In recognition to his/her participation in 5 days online internship program on **Geotechnical Investigation and Buliding Construction** conducted by **Madeckal Constructions** from **27.05.2021 to 31.05.2021**

Date : 01.06.2021
Cert. ID : MCIN10048

Dr. LEENA A
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KANNUR

MADECKAL CONSTRUCTIONS MUVATTUPUZHA

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SREE NARAYANA GURU COLLEGE OF ENGINEERING

& TECHNOLOGY

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Industrial Training

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ZINDOT TECHNOLOGIES

Submitted in partial fulfilment for the award of the degree of

Bachelor of Technology in Civil Engineering

Of

APJ Abdul Kalam Technological University

Submitted by

HIBA FAROOK AYAR

DEPARTMENT OF CIVILENGINEERING

Dr. LEENA A V
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DEPARTMENT CIVIL ENGINEERING

BONAFIDE CERTIFICATE

*This is to certify that Industrial Training at " **ZINDOT TECHNOLOGIES** " is a bonafide record of the work done by **Ms.HIBA FAROOK AYAR** of Civil Engineering Department towards the partial fulfillment for the award of the degree of Bachelor of Technology by APJ Abdul Kalam Technological University*

Faculty Advisor

Department of CE

Head of the Department

Department of CE

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

INTRODUCTION

The internship provided the student with an immersive experience in Geo technical investigation, a critical aspect of civil engineering. Geo technical investigation involves studying the properties of soil and rock at construction sites to assess their suitability for supporting structures and to identify potential hazards. Through various activities, the student gained hands-on experience in conducting site investigations, soil testing, and data analysis.

In addition to geotechnical investigation, the internship also exposed the student to building construction practices. This included learning about different construction materials, techniques, and methods used in the industry. By observing and participating in construction activities, the student gained insights into the practical aspects of building construction, such as foundation design, structural framing, and finishing work.

The internship offered a diverse array of activities aimed at enriching the student's understanding and practical skills in geotechnical investigation and building construction. These activities may have included site visits, laboratory testing, workshops, seminars, and hands-on projects. By engaging in a variety of experiences, the student was able to gain a comprehensive understanding of the principles and practices underlying civil engineering disciplines.

The internship provided the student with a solid foundation for their future endeavors in civil engineering. By participating in immersive activities and gaining practical experience, the student developed essential skills and knowledge relevant to the field. This foundation will serve as a springboard for their continued growth and success in their academic and professional pursuits in civil engineering.

Day One

The internship commenced with an overview of the fundamental concepts of geotechnical investigation. This introductory phase aimed to familiarize the individual with the principles and importance of geotechnical engineering in construction projects. Topics covered may have included soil mechanics, soil types, soil behavior under different conditions, and the role of geotechnical engineering in ensuring the stability and safety of structures.

The introductory sessions emphasized the crucial role of geotechnical investigation in construction projects. Participants learned how site investigation is a fundamental step in the construction process, providing essential information about soil properties, subsurface conditions, and potential hazards. Understanding these factors is vital for making informed decisions at every stage of a construction project, from planning and design to construction and maintenance.

The individual gained an understanding of the significance of site investigation in geotechnical engineering. Site investigation involves collecting data through various methods, such as soil sampling, borehole drilling, and geophysical surveys, to assess the characteristics of the site's soil and subsurface conditions. This information helps engineers evaluate the feasibility of construction, design appropriate foundation systems, and mitigate potential risks associated with ground conditions.

To prepare for hands-on activities, the individual received practical training on equipment usage and safety protocols. This training ensured that they were familiar with the operation of geotechnical testing equipment, such as soil sampling tools, borehole drilling rigs, and geophysical instruments. Additionally, they learned about safety procedures and protocols to ensure the well-being of themselves and others during fieldwork and testing activities.

The internship provided practical training on field testing techniques commonly used in geotechnical investigation. This may have included demonstrations and hands-on practice sessions on conducting tests such as Standard Penetration Test (SPT), Cone Penetration Test (CPT), and soil sampling. By learning these techniques, the individual gained proficiency in collecting field data and interpreting test results, essential skills for conducting effective geotechnical investigations.

Overall, the introductory phase of the internship provided the individual with a solid foundation in the fundamental concepts of geotechnical investigation. By emphasizing the importance of site investigation, providing practical training on equipment usage and safety protocols, and introducing field testing techniques, the internship prepared the individual for hands-on activities in subsequent days, ensuring they were equipped with the knowledge and skills necessary for success in geotechnical engineering.

Day Two

On the second day of the internship, the individual transitioned from theoretical learning to practical fieldwork, actively participating in geotechnical investigations at a construction site. Here's a detailed breakdown of their activities:

Under the guidance of experienced professionals or mentors, the individual actively participated in various geotechnical investigations. These professionals likely provided instructions, demonstrations, and supervision to ensure the individual's safety and the accurate execution of tests.

The individual conducted soil tests such as Standard Penetration Test (SPT) and Cone Penetration Test (CPT). These tests are standard methods used in geotechnical engineering to assess the properties of soil and determine its suitability for construction. By performing these tests, the individual gained practical experience in operating testing equipment and executing tests accurately.

In the SPT, the individual would have used a drilling rig to advance a sampler into the ground, collecting soil samples at regular intervals. They then used a standard weight and a drop hammer to drive a split-barrel sampler into the soil, recording the number of blows required to penetrate the soil to a specified depth. This provides an indication of the soil's resistance to penetration and helps evaluate its engineering properties.

The individual may have also participated in conducting Cone Penetration Tests (CPT), where a cone-shaped penetrometer is pushed into the ground at a constant rate, measuring the soil resistance as it penetrates. This test provides valuable data on soil behavior, including strength, comprehensibility, and stratigraphy.

In addition to conducting tests, the individual participated in soil sampling activities. Soil sampling involves collecting soil samples from various depths using specialized tools such as augers or core barrels. These samples are then analyzed in the laboratory to determine their physical and mechanical properties. By participating in soil sampling, the individual further honed their practical skills in geotechnical engineering and gained firsthand experience in handling and analyzing soil samples.

Through hands-on participation in fieldwork, the individual developed proficiency in operating geotechnical testing equipment. They learned how to set up equipment, perform tests according to established procedures, and troubleshoot any issues that arose during testing. This practical experience was invaluable for building confidence and competence in conducting geotechnical investigations.

Overall, the second day of the internship provided the individual with valuable hands-on experience in geotechnical fieldwork. By actively participating in soil testing and sampling activities under guidance, they gained practical skills, confidence, and a deeper understanding of the practical aspects of geotechnical engineering.

Day Three

Here's a detailed breakdown of the activities and learning outcomes: The individual learned how to interpret the results of various geotechnical tests conducted on the previous days, such as Standard Penetration Test (SPT) and Cone Penetration Test (CPT). They were introduced to techniques for analyzing test data, including understanding soil behavior, strength characteristics, and stratigraphy based on the test results. This interpretation is crucial for assessing the engineering properties of the soil and its suitability for construction projects.

Building on the interpretation of test results, the individual delved into the analysis of soil properties. They learned how to analyze key soil parameters such as grain size distribution, moisture content, shear strength, compressibility, and permeability. Understanding these properties allows engineers to assess the stability, settlement, and drainage characteristics of the soil, which are vital considerations in construction project design and implementation. The individual gained insights into how the analysis of soil properties and test results informs decision-making in construction projects. They learned to identify potential risks and challenges associated with soil conditions, such as foundation settlement, slope stability, and groundwater seepage. Understanding these implications is essential for developing effective engineering solutions and mitigating construction risks.

Emphasis was placed on the significance of geotechnical reports in informing engineering decisions and mitigating construction risks. The individual learned about the structure and content of geotechnical reports, which typically document the findings of site investigations, laboratory testing, data analysis, and engineering recommendations. Geotechnical reports serve as valuable tools for communicating the results of geotechnical investigations to project stakeholders, including designers, contractors, and clients.

The activities on the third day laid the groundwork for informed decision-making in geotechnical engineering. By understanding how to interpret test results, analyze soil properties, and assess their implications for construction projects, the individual gained the knowledge and skills necessary to make informed decisions regarding site selection, foundation design, and risk management. This lays a solid foundation for ensuring the safety, stability, and success of construction projects.

Overall, the third day of the internship focused on developing the individual's ability to analyze and interpret geotechnical data, understand its implications for construction projects, and communicate findings effectively through geotechnical reports. By mastering these skills, the individual is better equipped to contribute to informed decision-making and risk mitigation in geotechnical engineering practice.

Day Four

On the fourth day of the internship, the focus shifted towards building construction, offering the individual practical insights into different facets of the construction process. Here's a detailed breakdown of the activities and learning outcomes:

The individual participated in site visits to ongoing construction projects. These visits provided firsthand exposure to real-world construction sites, allowing the individual to observe construction activities, techniques, and methods in action. By witnessing construction processes on-site, they gained practical insights into the implementation of engineering principles and concepts learned in the classroom.

During the site visits, the individual observed various aspects of foundation design. This included observing different types of foundations being constructed, such as shallow foundations (e.g., spread footings, mat foundations) and deep foundations (e.g., piles, caissons). They learned about the importance of site investigations in informing foundation design decisions and ensuring structural stability and integrity.

The individual gained insights into the design and construction of structural elements of buildings. They observed structural components such as columns, beams, slabs, and walls being installed and constructed. By seeing these elements in context, the individual developed an understanding of how structural systems function and interact to support the building's load and provide stability.

During the site visits, the individual had the opportunity to explore different construction materials used in building construction. This included observing the use of materials such as concrete, steel, masonry, and wood in various construction applications. They learned about the properties, characteristics, and performance of different materials and how they are selected and utilized in building design and construction.

Through the site visits and observations, the individual gained an appreciation for the interdisciplinary coordination required in civil engineering projects. They recognized the close relationship between geotechnical investigations, foundation design, and building construction. Understanding how geotechnical considerations influence building design and construction processes highlighted the interdisciplinary nature of civil engineering projects and the importance of collaboration between different engineering disciplines.

Overall, the fourth day of the internship provided the individual with practical insights into building construction, foundation design, structural elements, and construction materials. Through site visits and observations, they gained valuable hands-on experience and a deeper understanding of the practical aspects of civil engineering projects. This exposure to real-world construction sites enhanced their appreciation for the interdisciplinary coordination required in civil engineering practice and prepared them for future endeavors in the field.

Day Five

On the final day of the internship, the individual participated in a reflective session, which served as an opportunity to summarize their learning and experiences. Here's a detailed breakdown of the activities and outcomes of the reflective session:

The individual reflected on their experiences throughout the internship, summarizing the key learning and insights gained. They discussed the theoretical concepts and practical skills learned during the internship, as well as the hands-on experiences gained through fieldwork, laboratory testing, and site visits. This reflection allowed them to consolidate their understanding of geotechnical investigation and building construction and to recognize the value of the internship in their professional development.

The individual engaged in discussions with supervisors and peers, sharing their experiences and receiving feedback on their performance. These discussions provided an opportunity for constructive dialogue, allowing the individual to receive guidance, advice, and constructive criticism from experienced professionals. They also had the chance to learn from their peers' experiences and perspectives, fostering a collaborative learning environment.

During the reflective session, the individual received feedback on their performance from supervisors and peers. This feedback may have included recognition of strengths and areas for improvement, as well as suggestions for further development. Receiving feedback allowed the individual to gain insights into their strengths and weaknesses, identify areas for growth, and set goals for future improvement.

The reflective session concluded with a sense of accomplishment, as the individual reflected on their journey and the progress made throughout the internship. They recognized the value of their experiences and the skills gained, feeling proud of their achievements and contributions during the internship period.

The individual left the reflective session with a sense of readiness to apply their newfound knowledge and skills in future endeavors in civil engineering. Equipped with practical skills and insights gained during the internship, they felt confident in their ability to tackle challenges and succeed in their future career pursuits.

Overall, the reflective session on the final day of the internship provided the individual with an opportunity to summarize their learning, receive feedback, and reflect on their experiences. This reflective process allowed them to gain valuable insights into their strengths and areas for improvement, fostering personal and professional growth. With a comprehensive understanding of geotechnical investigation and building construction and practical skills gained during the internship, they are well-prepared to embark on a successful career in civil engineering.

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

SREE NARAYANA GURU
COLLEGE OF ENGINEERING & TECHNOLOGY

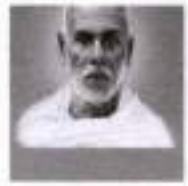
(PROMOTED BY SREE BHAKTHI SAMVARDHINI YOGAM, KANNUR)
CHALAKODE P.O., PAYYANUR, KANNUR-670307, KERALA

DEPARTMENT OF CIVIL ENGINEERING
INTERNSHIP DETAILS

ACADEMIC YEAR 2018-2019

Sl. No.	Name	Industry	Duration
1	MIRSHAD EM	CHIRAKKAL GRAMA PANCHAYATH	17/07/2019-31/07/2019
2	AMRITHA P	PAPPINISSERI GRAMA PANCHAYATH	17/07/2019-31/07/2019
3	ANJALI V	KADIRUR GRAMA PANCHAYATH	17/07/2019-31/07/2019
4	NANMA JAYARAJ	CHEMBILODE GRAMA PANCHAYATH	17/07/2019-31/07/2019
5	SREENATH PRAKASH C	KANKOL-ALAPPADAMAB GRAMA PANCHAYATH	17/07/2019-31/07/2019
6	SWANAM C	EANHOLI GRAMA PANCHAYATH	17/07/2019-31/07/2019
7	DRISHYA KP	IRIKKUR GRAMA PANCHAYATH	17/07/2019-31/07/2019
	NAYANA RAGHUNATH	KOTTAYAM GRAMA PANCHAYATH	17/07/2019-31/07/2019
9	ANGAJA PRAKASH	KARIVELLUR PERALAM GRAMA PANCHAYATH	17/07/2019-31/07/2019
10	ANOJA M	KARIVELLUR PERALAM GRAMA PANCHAYATH	17/07/2019-31/07/2019
11	ANJALI V	KADIRUR GRAMA PANCHAYATH	17/07/2019-30/07/2019
12	SAFWAN HARIS	CADD CENTRE PAYYANUR	JULY 2019
13	RAHUL P	CADD CENTRE PAYYANUR	JULY 2019

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR



SREE NARAYANA GURU
COLLEGE OF ENGINEERING & TECHNOLOGY

(PROMOTED BY SREE BHAKTHI SAMVARDHINI YOGAM, KANNUR)
CHALAKODE P.O., PAYYANUR, KANNUR–670307, KERALA

DEPARTMENT OF CIVIL ENGINEERING
INTERNSHIP DETAILS

14	KIRAN K	CADD CENTRE PAYYANUR	JULY 2019
15	AYSHA RIZWANA A K	CADD CENTRE PAYYANUR	JULY 2019
16	MOHAMMED NIHAD P VALIYAKATH	CADD CENTRE PAYYANUR	JULY 2019
17	ANJIMA BP	CADD CENTRE PAYYANUR	JULY 2019
18	ADARSH SV	CADD CENTRE PAYYANUR	JULY 2019
19	SAFIYATH APV	CADD CENTRE PAYYANUR	JULY 2019
20	SHIFANA MUHAMMED ASHRAF	CADD CENTRE PAYYANUR	JULY 2019
21	AMAL PR	CADD CENTRE KANNUR	22/07/2019-26/07/2019
22	FATHIMATHUL SANA CC	CADD CENTRE KANNUR	22/07/2019-26/07/2019
23	NANDITHA BABU	CADD CENTRE KANNUR	22/07/2019-26/07/2019
24	SHIREEN SADIQUE	CADD CENTRE KANNUR	22/07/2019-26/07/2019
25	REVATHI K	CADD CENTRE KANNUR	22/07/2019-26/07/2019
26	MITHUNA VP	CADD CENTRE KANNUR	22/07/2019-26/07/2019
27	SAFA AMEER	CADD CENTRE KANNUR	22/07/2019-26/07/2019
28	ABHIYUKTHA PV	CADD CENTRE KANNUR	22/07/2019-26/07/2019

HOD

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

Certificate No: 16238

MSME - TECHNOLOGY DEVELOPMENT CENTRE (PPDC)

एमएसएमई- तकनीकी विकास केन्द्र, आगरा

Ministry of Micro, Small & Medium Enterprises

सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय

Government of India Organization

भारत सरकार की संस्था

Foundry Nagar, Agra

Certificate of Internship

This is to certify that

Mr/ Ms NANDITHA BABU

has successfully completed Internship on

2D DESIGN MANAGEMENT

from 22-07-2019 to 26-07-2019 organized at

CADD Centre Kannur, Downtown

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

CADD CENTRE
Skills Driven Job Led

Rajith KP
Centre Head

MINISTRY OF MSME-TDC (PPDC) AGRA
PPDC

Principal Director
(MSME - TDC(PPDC))

Certificate No: 16234

MSME - TECHNOLOGY DEVELOPMENT CENTRE (PPDC)

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Ministry of Micro, Small & Medium Enterprises

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Government of India Organization

भारत सरकार की संस्था

Foundry Nagar, Agra

Certificate of Internship

This is to certify that

Mr/ Ms FATHIMATHUL SANA CC

has successfully completed Internship on

2D DESIGN MANAGEMENT

from 22-07-2019 to 26-07-2019 organized at

CADD Centre Kannur, Downtown

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Skills Driven. Job Led

Rajith KP
Centre Head

PPDC

Principal Director
(MSME - TDC(PPDC))

Certificate No: 16230

MSME - TECHNOLOGY DEVELOPMENT CENTRE (PPDC)

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Government of India Organization

भारत सरकार की संस्था

Foundry Nagar, Agra

Certificate of Internship

This is to certify that

Mr/ Ms AMAL P R

has successfully completed Internship on

2D DESIGN MANAGEMENT

from 22-07-2019 to 26-07-2019 organized at

CADD Centre Kannur, Downtown

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Rajith KP
Centre Head

MINISTRY OF MSME-TDC (PPDC) AGRA
PPDC

Principal Director
(MSME - TDC(PPDC))

CERTIFICATE OF INTERNSHIP

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QUALITY FIRST

Name : SHIFANA MUHAMMED ASHRAF

In : AutoCAD **At:** SNGCET, PAYYANUR

By : CADD Centre Payyannur

During : July 2019 **Duration** : 40 Hrs

Shameez Mohammed
Centre Head

Dr. LEENA A. V.
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Name : SAFIYATH A.P.V

In : AutoCAD **At:** SNGCET, PAYYANUR

By : CADD Centre Payyannur

During : July 2019 **Duration** : 40 Hrs

Shameez Mohammed
Centre Head

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In : AutoCAD **At:** SNGCET, PAYYANUR

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During : July 2019 **Duration** : 40 Hrs

Shameez Mohammed
Centre Head

Dr. LEENA A. V.
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In : AutoCAD **At:** SNGCET, PAYYANUR

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Name : MOHAMMED NIHAD P VALIYAKATH

In : AutoCAD **At:** SNGCET, PAYYANUR

By : CADD Centre Payyannur

During : July 2019 **Duration** : 40 Hrs

Shameez Mohammed
Centre Head

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Name : AYSHA RIZWANA A.K

In : AutoCAD **At:** SNGCET, PAYYANUR

By : CADD Centre Payyannur

During : July 2019 **Duration** : 40 Hrs

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KANNUR

Shameez Mohammed
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Name : KIRAN K

In : AutoCAD **At:** SNGCET, PAYYANUR

By : CADD Centre Payyannur

During : July 2019 **Duration** : 40 Hrs

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PRINCIPAL
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KANNUR

Shameez Mohammed
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Name : RAHUL P

In : AutoCAD **At:** SNGCET, PAYYANUR

By : CADD Centre Payyannur

During : July 2019 **Duration** : 40 Hrs

Shameez Mohammed
Centre Head

Dr. LEENA A. V.
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Name : SAFWAN HARIS

In : AutoCAD **At:** SNGCET, PAYYANUR

By : CADD Centre Payyannur

During : July 2019 **Duration** : 40 Hrs

Shameez Mohammed
Centre Head

Dr. LEENA A. V.
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A1/3771/19

Eranholi grmapanchayath office

Date - 03/8/2019

Certificate

Certified that Kumari.Swaram.C, Rohinipuram, Kavumbhagam(PO) 670649 , student of SNGCET-Payyannur has done the internship on Civil Engineering in Eranholi gramapanchayat from 17/07/2019 to 30/7/2019 .

OFFICE OF THE ERANHOLI GRAMA PANCHAYATH
P.O. ERANHOLI - 670107

SECRETARY
ERANHOLI GRAMA PANCHAYAT
P.O. ERANHOLI - 670 107
Ph: 9496049104

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

ഇരിക്കൂർ ഗ്രാമപഞ്ചായത്ത് സെക്രട്ടറിയുടെ നടപടിക്രമം

(ഹാജർ : ശ്രീ.എൻ യു. ഇബ്രാഹിം)

വിഷയം:- അസാപ് –ദൃശ്യ. കെ പി ക്ക് ഇന്റേൺഷിപ് അനുവാദം നൽകുന്നത് സംബന്ധിച്ച്.

സൂചന :- അസാപ് കണ്ണൂർ ജില്ലാ പ്രോഗ്രാം മാനേജരുടെ കത്ത്.

Referance No-ASAPL18272

ഉത്തരവ് നമ്പർ : എ3-50/2018 തീയതി : 18/07/2019

ഇരിക്കൂർ ഗ്രാമപഞ്ചായത്തിൽ അസാപിന്റെ ഇന്റേൺഷിപ് ചെയ്യുന്നതിന് മേൽ സൂചന പ്രകാരം നിയമിതയായ ദൃശ്യ. കെ പി യെ 18/07/2019(FN) ാം തീയതി CAT സർട്ടിഫിക്കറ്റിനായുള്ള ഇന്റേൺഷിപ്പിന് നിയമിച്ച് ഇതിനാൽ ഉത്തരവാകുന്നു. ടിയാൻ B.Tech(Civil) വിദ്യാർത്ഥിയായതിനാൽ ഇന്റേൺഷിപ്പിനായി അസി.എഞ്ചിനീയർ, ഇരിക്കൂറിന്റെ കീഴിൽ നിയോഗിച്ച് കൊണ്ടും ഉത്തരവാകുന്നു. ടിയാളിൽ നിക്ഷിപ്തമായ ചുമതലകൾ കൃത്യമായും ഉത്തരവാദിത്തത്തോടെയും നിർവ്വഹിക്കേണ്ടതാണ്.

Secretary
IRIKKUR GRAMA PANCHAYAT
P. O. IRIKKUR

പകർപ്പ്-

1. അസി. എഞ്ചിനീയർ, ഇരിക്കൂർ
2. ദൃശ്യ. കെ പി
3. ഫയൽ.

OFFICE OF THE IRIKKUR GRAMA PANCHAYAT
Date.....
P. O. IRIKKUR

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

KADIRUR GRAMA PANCHAYAT

KADIRUR(PO), 670642 (PIN), KANNUR(DISTRICT), KERALA
Ph: 0490-2306564 , EMAIL: secretary.kadirur638@gmail.com

CERTIFICATE

This is to certify that Mrs. Anjali V, sixth semester civil engineering student of Sree Narayana Guru College of Engineering and Technology, Chalakode post Payyanur-670307 has successfully completed industrial training in Kadirur Gramapanchayat Kadirur,Thalassery for a periode of 15 days from 17/07/2019 to 30/07/2019

During her association with us, she was very keen and enthusiastic in her work

We wish her all the best for future careers.

OFFICE OF THE KADIRUR GRAMA PANCHAYAT KANNUR (DT.) KERALA STATE INDIA P.O. KADIRUR-670642

ASSISTANT ENGINEER
L.S.G.D. SECTION
KANNUR

SUJITH KUMAR. P
Secretary
Kadirur Grama Panchayat
P.O. Kadirur, Kannur (Dist.)- 670 642
Kerala State, India. Ph: 0490 2306564

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

CERTIFICATE OF INTERNSHIP

We present this certificate to

anoja m

for successfully completing the internship stint as **Civil Engineering Intern** at **Karivellur Peralam Grama Panchayat**

between 17 th July 2019 and 31 st July 2019

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANNUR
KANNUR

CERTIFICATE OF INTERNSHIP

We present this certificate to

Angaja Prakash

for successfully completing the internship stint as **Civil Engineering Intern at Karivellur Peralam Grama Panchayat**

between 17 th July 2019 and 31 st July 2019

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

CERTIFICATE OF INTERNSHIP

We present this certificate to

Nayana Raghunath

for successfully completing the internship stint as **Civil Engineering Intern** at **Kottayam Grama Panchayat**

between 17 th July 2019 and 31 st July 2019

OFFICE OF THE KOTTAYAM GRAMA PANCHAYAT
P.O.Kottayam
Date.....

MANJUSHA.P.N.
Secretary
Kottayam Grama Panchayat
P.O.Kodayampoil
Via.Pathayakunnu,Pin:670691
Mob:9496049107,Office:0490 2361919

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

CERTIFICATE OF INTERNSHIP

We present this certificate to

Drishya KP

for successfully completing the internship stint as **Civil Engineering Intern** at **Irikkur Grama Panchayat**

between 17 th July 2019 and 31 st July 2019

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

CERTIFICATE OF INTERNSHIP

We present this certificate to

SREENATH PRAKASH C

for successfully completing the internship stint as **Civil Engineering Intern** at **Kankol - Alappadamba Grama Panchayat**

between 17 th July 2019 and 31 st July 2019

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

CERTIFICATE OF INTERNSHIP

We present this certificate to

Nanma Jayaraj

for successfully completing the internship stint as **Civil Engineering Intern** at **Chembilode Grama Panchayat**

between 17 th July 2019 and 31 st July 2019

Office of the Chembilode Grama Panchayath (P.O.) Mowanchery 670 613

Dr. LEENA. A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

SHEEJA MANI. K
Secretary
CHEMBILODE GRAMA PANCHAYATH
P.O. MOWANCHERY - 670 613
KANNUR DIST., KERALA
Ph: 04972-851601, Mob: [illegible]

ADDITIONAL SKILL ACQUISITION PROGRAMME asap

CERTIFICATE OF INTERNSHIP

We present this certificate to

ANJALI V

for successfully completing the internship stint as **Civil Engineering Intern** at **Kadirur Grama Panchayat**

between 17 th July 2019 and 31 st July 2019

CERTIFICATE OF INTERNSHIP

We present this certificate to

Amritha P

for successfully completing the internship stint as **Civil Engineering Intern** at **Pappinisseri Grama Panchayat**

between 17 th July 2019 and 31 st July 2019

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

CERTIFICATE OF INTERNSHIP

We present this certificate to

MIRSHAD E.M

for successfully completing the internship stint as **Civil Engineering Intern** at **Chirakkal Grama Panchayat**

between 17 th July 2019 and 31 st July 2019

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANNUR
KANNUR

CERTIFICATE OF INTERNSHIP

We present this certificate to

Swanam C

for successfully completing the internship stint as **Civil Engineering Intern** at **Eranholi Grama Panchayat**

between 17 th July 2019 and 31 st July 2019

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

Certificate No: 16228

MSME - TECHNOLOGY DEVELOPMENT CENTRE (PPDC)

एमएसएमई- तकनीकी विकास केन्द्र, आगरा

Ministry of Micro, Small & Medium Enterprises

सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय

Government of India Organization

भारत सरकार की संस्था

Foundry Nagar, Agra

Certificate of Internship

This is to certify that

Mr/ Ms ABHIYUKTHA P V

has successfully completed Internship on

2D DESIGN MANAGEMENT

from 22-07-2019 to 26-07-2019 organized at

CADD Centre Kannur, Downtown

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

MINISTRY OF MSME-TDC (PPDC) AGRA

CADD CENTRE
Skills Driven. Job Led

Rajith KP
Centre Head

PPDC

Principal Director
(MSME - TDC(PPDC))

Certificate No: 16241

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एमएसएमई- तकनीकी विकास केन्द्र, आगरा

Ministry of Micro, Small & Medium Enterprises

सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय

Government of India Organization

भारत सरकार की संस्था

Foundry Nagar, Agra

Certificate of Internship

This is to certify that

Mr/ Ms **SAFA AMEER**

has successfully completed Internship on

2D DESIGN MANAGEMENT

from **22-07-2019** to **26-07-2019** organized at

CADD Centre **Kannur, Downtown**

DR. LEENA. A. V.
PRINCIPAL

CADD CENTRE
Skills Driven. Job Led

Rajith KP
Centre Head

MINISTRY OF MSME-TDC
(PPDC) AGRA
PPDC

Principal Director
(MSME - TDC(PPDC))

Certificate No: 16236

MSME - TECHNOLOGY DEVELOPMENT CENTRE (PPDC)

एमएसएमई- तकनीकी विकास केन्द्र, आगरा

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सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय

Government of India Organization

भारत सरकार की संस्था

Foundry Nagar, Agra

Certificate of Internship

This is to certify that

Mr/ Ms MITHUNA V P

has successfully completed Internship on

2D DESIGN MANAGEMENT

from 22-07-2019 **to** 26-07-2019 **organized at**

CADD Centre Kannur, Downtown

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANNUR
KANNUR

CADD CENTRE
Skills Driven Job Led

Rajith KP
Centre Head

PPDC

Principal Director
(MSME - TDC/PPDC)

Certificate No: 16240

MSME - TECHNOLOGY DEVELOPMENT CENTRE (PPDC)

एमएसएमई- तकनीकी विकास केन्द्र, आगरा

Ministry of Micro, Small & Medium Enterprises

सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय

Government of India Organization

भारत सरकार की संस्था

Foundry Nagar, Agra

Certificate of Internship

This is to certify that

Mr/ Ms REVATHI K

has successfully completed Internship on

2D DESIGN MANAGEMENT

from 22-07-2019 to 26-07-2019 organized at

CADD Centre Kannur, Downtown

Dr. LEENA. A. V.
PRINCIPAL
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ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

CADD CENTRE
Skills Driven Job Led

Rajith KP
Centre Head

MINISTRY OF MSME-TDC (PPDC) AGRA

PPDC

Principal Director
(MSME - TDC(PPDC))

Certificate No: 16244

MSME - TECHNOLOGY DEVELOPMENT CENTRE (PPDC)

एमएसएमई- तकनीकी विकास केन्द्र, आगरा

Ministry of Micro, Small & Medium Enterprises

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Government of India Organization

भारत सरकार की संस्था

Foundry Nagar, Agra

Certificate of Internship

This is to certify that

Mr/ Ms SHIREEN SADIQUE

has successfully completed Internship on

2D DESIGN MANAGEMENT

from 22-07-2019 to 26-07-2019 organized at

CADD Centre Kannur, Downtown

Dr. LEENA. A. V.
PRINCIPAL
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CADD CENTRE
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Rajith KP
Centre Head

MINISTRY OF MSME-TDC (PPDC) AGRA
PPDC

Principal Director
(MSME - TDC(PPDC))

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

Industrial Training

At

CADD Centre, Kannur

Submitted in partial fulfilment for the award of the degree of

Bachelor of Technology in Civil Engineering

Of

APJ Abdul Kalam Technological University

Submitted by

NANDITHA BABU

DEPARTMENT OF CIVILENGINEERING

2019

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

DEPARTMENT CIVIL ENGINEERING

BONAFIDE CERTIFICATE

This is to certify that Industrial Training at **"CADD Centre, Kannur"** *is a bonafide record of the work done by* **Ms. NANDITHA BABU** *of seventh semester* ***Department of Civil Engineering*** *towards the partial fulfillment for the award of the degree of* **Bachelor of Technology** *by APJ Abdul Kalam Technological University*

Faculty Advisor

Department of CE

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

Head of the Department

Department of CE

INTRODUCTION

The internship at CAD Centre in Kannur served as a pivotal opportunity for myself to enhance my skills in 2D design management. Over the span of five days, immersed myself in a comprehensive learning experience that encompassed various facets of CAD software.

From the outset, I was introduced to the intricacies of CAD software during orientation sessions. These sessions provided with a foundational understanding of the software's interface, tools, and functionalities. With guidance from experienced professionals, I navigated through the CAD environment, familiarizing myself with key features and capabilities.

As the internship progressed, I delved deeper into the nuances of CAD software. I explored different drawing commands, tools, and techniques used in 2D design management. Through practical exercises and hands-on projects, I gained valuable experience in applying these commands to create detailed drawings and layouts.

Moreover, the internship provided with a platform to bridge the gap between theoretical knowledge and practical application. By working on real-world design projects, I honed my skills in problem-solving, critical thinking, and decision-making. I learned to analyze design requirements, conceptualize solutions, and execute designs effectively using CAD software.

Throughout the internship, I benefited from the guidance and mentor ship of experienced professionals at CAD Centre. Their expertise and insights provided with invaluable support and direction as she navigated through the intricacies of CAD software and design management.

In summary, the internship at CAD Centre in Kannur was a trans formative experience for myself. It equipped with practical skills, theoretical knowledge, and industry insights that will be invaluable as she pursues my career in the field of engineering and design. Through dedication, hard work, and guidance from experienced professionals, I emerged from the internship with enhanced proficiency in 2D design management and a solid foundation for future growth and success.

Intern: Nanditha Babu
Training Center: CADD Centre, Kannur
Training Duration: July 22, 2019, to July 26, 2019
Institution: Sree Narayana Guru College of Engineering & Technology

DAY ONE

On the first day of my internship at CAD Centre, I embarked on my journey with a keen sense of enthusiasm and curiosity. The day began with an orientation session, during which I was introduced to the training center's facilities and resources. This included a tour of the center's premises, I familiarized myself with the layout of the training rooms, computer labs. Following the orientation, i had the opportunity to meet with the training coordinator, who provided my with essential information about the internship program. This included an overview of the training schedule, objectives, and expectations. The training coordinator also addressed any queries or concerns that i may have had, ensuring that I felt comfortable and prepared for the upcoming training sessions. A significant component of the first day's activities was an introductory overview of CAD software and its significance in modern engineering practices. I learned about the various CAD software applications commonly used in the industry and their role in streamlining the design and drafting processes. This overview provided with a foundational understanding of CAD technology and its relevance in the context of my internship. Hands-on experience with basic 2D drafting tools was highlight of my first day at CAD Centre. Under the guidance of experienced instructors, I had the opportunity to explore fundamental drawing commands and tools within the CAD software interface. This practical session allowed me to familiarize myself with the software's user interface, navigation tools, and basic drawing commands such as line, circle, arc, and polyline. By the end of the first day, I had laid a solid foundation for my subsequent learning and development throughout the internship program. The orientation session, introductory overview of CAD software, and hands-on experience with basic 2D drafting tools provided with valuable insights and skills that would serve as the building blocks for my journey into the world of 2D design management.

DAY TWO

On the second day of my internship at CAD Centre, my focus shifted towards advancing my skills in 2D design management. This involved a deeper exploration of the various drawing commands and tools available within the CAD software interface.

The day began with a comprehensive overview of these drawing commands, during which I learned about their functionalities, applications, and practical uses in the context of 2D design. Through interactive demonstrations and guided tutorials, I gained a thorough understanding of how to utilize these commands effectively to create precise and intricate 2D drawings.

Practical exercises formed a significant part of my learning experience on the second day. These exercises provided with hands-on opportunities to apply the drawing commands i had learned, allowing to practice and refine my skills in real-time. I worked on a variety of design tasks, including creating geometric shapes, drafting simple objects, and sketching basic layouts.

By actively participating in these practical exercises, i honed my ability to use drawing commands accurately and efficiently. i learned how to manipulate objects, adjust parameters, and customize settings to achieve desired outcomes in my designs. Through trial and error, I gained confidence in my ability to navigate the CAD software interface and leverage its tools to bring my design concepts to life.

In addition to mastering drawing commands, I also gained insights into organizing and managing drawing files efficiently. I learned about file organization principles, folder structures, and naming conventions commonly used in design projects. This knowledge equipped with the skills needed to maintain a well-organized and structured workspace, ensuring that my design files were easy to locate, access, and manage throughout the course of my internship.

By the end of the second day, I had made significant progress in my journey towards becoming proficient in 2D design management. Through a combination of theoretical instruction, practical exercises, and hands-on experience, I had developed a strong foundation of skills and knowledge that would serve well in the days to come.

DAY THREE

On the third day of the internship, the focus shifted towards delving deeper into 2D design management concepts. I explored advanced drawing and editing techniques within the CAD software. This included topics such as dimension, scaling, and layer management, which are essential for maintaining design accuracy and adherence to industry standards. The day began with an in-depth exploration of dimension techniques, where I learned how to add accurate dimensions to my drawings. This involved understanding different dimension styles, including linear, angular, and radial dimensions, and how to apply them appropriately to convey design information effectively.

Scaling was another crucial aspect covered on the third day. I learned how to scale drawings accurately to represent real-world dimensions. This involved understanding scale factors and applying them correctly to ensure that drawings were proportionate and aligned with project requirements. Layer management was also emphasized during the training session. I gained insights into organizing and managing drawing elements using layers effectively. This included creating, naming, and organizing layers to streamline the design process and maintain clarity and organization within drawings. Throughout the day, emphasis was placed on maintaining design accuracy and adherence to industry standards. I learned about the importance of precision in design work and how to ensure that drawings met quality and accuracy requirements. By understanding and applying industry standards, I was better equipped to produce high-quality designs that met professional expectations.

Group discussions and problem-solving exercises played a significant role in enhancing my understanding of design principles. By actively participating in these activities, I had the opportunity to collaborate with my peers, share insights, and learn from others' experiences. This interactive approach fostered a deeper understanding of design concepts and encouraged critical thinking and problem-solving skills. By the end of the third day, I had gained valuable insights into advanced drawing and editing techniques in 2D design management. Through a combination of theoretical instruction, hands-on practice, and collaborative learning, I had further enhanced my proficiency in CAD software and expanded my knowledge of design principles and industry standards.

DAY FOUR

On the fourth day of the internship, the emphasis was on project-based learning, where I had the opportunity to apply my newfound skills to real-world design scenarios. Under the guidance of instructors, I worked on designing floor plans, elevations, and sections for architectural projects.

The day began with an overview of the project objectives and requirements. I was assigned specific design tasks related to architectural drafting, which included creating floor plans to depict the layout of buildings, elevations to illustrate the exterior appearance, and sections to show the internal structure and details. With guidance from the instructors, I commenced the design process by conceptualizing the layout and structure of the architectural projects. I utilized my knowledge of drawing commands, dimensionless techniques, and layer management to create accurate and detailed drawings. I paid careful attention to design considerations such as space utilization, functionality, and aesthetics, ensuring that the designs met the project requirements and client expectations. As I progressed with the design tasks, I gained hands-on experience in creating detailed drawings. I incorporated annotations, labels, and symbols to provide additional information and clarify design elements. I learned how to effectively communicate design intent through annotations, ensuring that the drawings were clear, concise, and easy to interpret.

Throughout the day, I collaborated closely with the instructors, seeking feedback and guidance as I worked on the design projects. The instructors provided valuable insights and suggestions, helping I overcome challenges and refine my designs. This collaborative learning approach fostered a supportive environment where I could learn from the expertise of my instructors and further develop my skills.

By the end of the day, I had gained valuable hands-on experience in applying my skills to real-world design scenarios. I had successfully created detailed floor plans, elevations, and sections for architectural projects, incorporating annotations and preparing drawings for presentation and documentation purposes. This project-based learning experience provided I with a practical understanding of how to apply my CAD skills in professional design projects and prepared for future endeavors in the field of engineering and design.

Dr. LEENA A V
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PAYYANUR, KANNUR

Est. 2003

Sree Narayana Guru College of Engineering & Technology

CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

INTERNSHIP DETAILS

ACADEMIC YEAR 2023-2024

Sl No	Name	Industry	Year	Duration
1	MOHAMMED RAZI HAMZA	LEARNHEROS	2023-2024	5 days
2	Arathi TV	PACELAB	2023-2024	5 DAYS
3	Anupam KV			

For SENIOR FACULTY ADVISOR

HOD

PRINCIPAL

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

CERTIFICATE
of Completion

THIS CERTIFICATE IS PROUDLY PRESENTED TO

MOHAMMED RAZI HAMZA

This is to certify that Mr. / Ms. MOHAMMED RAZI HAMZA successfully completed the 5 DAYS INTERNSHIP PROGRAM IN PYTHON course

We Appreciate your effort, keep participating

26/11/2023

THE FOUNDER & CEO

LEARNHEROS

DATE

Dr. LEENA A. V.
PRINCIPAL

AN INTERNSHIP PROGRAM ON PYTHON COURSE

Submitted to
HOD (CSE DEPARTMENT)

In accordance to Internship

Submitted by
MUHAMMED RAZI HAMZA

DEPARTMENT OF COMPUTER SCIENCE
AND ENGINEERING

SREE NARAYANA GURU COLLEGE

OF ENGINEERING & TECHNOLOGY,

PAYANNUR

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

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2. Internship Objectives

3. Internship Overview

4. Key Learning's

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6. Conclusion

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8. Acknowledgments

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Dr. LEENA A V
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SREE NARAYANA GURU COLLEGE OF
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PAYYANUR, KANNUR

1. Introduction

The internship program on Python coursework provided by LearnHeros was a valuable learning experience that enhanced my skills and knowledge in Python programming. This report outlines the objectives of the internship, provides an overview of the program, discusses key learnings, highlights project work, and concludes with recommendations and acknowledgments.

2. Internship Objectives

The primary objectives of the internship were:

- Gain practical experience in Python programming.
- Learn essential concepts and techniques in Python.
- Develop problem-solving skills using Python.
- Understand the application of Python in real-world scenarios.
- Enhance coding proficiency and efficiency.

3. Internship Overview

The internship spanned seven days and consisted of interactive online sessions, hands-on coding exercises, and project-based learning. The curriculum was designed to cover fundamental to advanced topics in Python, including data types, control structures, functions, modules, object-oriented programming, and file handling.

4. Key Learnings

7. Recommendations

Based on my experience, I recommend the following enhancements to the internship program:

1. Incorporate more real-world projects to apply learned concepts.
2. Provide additional resources for advanced topics like data analysis, web development, and machine learning with Python.
3. Offer opportunities for peer collaboration and code reviews to foster learning and teamwork.

8. Acknowledgments

I would like to express my gratitude to the instructors and mentors at LearnHeros for their guidance and support throughout the internship. Their expertise and encouragement were invaluable in my learning process.

9. References

- Python.org Documentation: https://docs.python.org/
- Learn Python Programming: https://www.learnpython.org/
- Real Python Tutorials: https://realpython.com/

This concludes the internship report on Python coursework. Thank you for the opportunity to participate in this program and expand my skills in Python programming.

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

PACELAB
Redefining Technology

CERTIFICATE *of* INTERNSHIP

This is to certify that

Anupam K V

Sree Narayana Guru College of Engineering & Technology, Payyanur

has successfully completed one week internship on

Data Science

conducted by Pace Lab, Kochi from 12th September to 16th September, 2023

Rajath Navas
Chief Executive Officer
PACE LAB

PACE LAB Kochi-682020 Kadavanthra, Girinagar Enclave

PACE LAB CERTIFIED

2023/EKM/1206

PACELAB
Redefining Technology

CERTIFICATE *of* INTERNSHIP

This is to certify that

Arathi TV

Sree Narayana Guru College of Engineering & Technology, Payyanur

has successfully completed one week internship on

Data Science

conducted by Pace Lab, Kochi from 12th September to 16th September, 2023

Rajath Navas
Chief Executive Officer
PACE LAB

PACE LAB Kochi-682020 Kadavanthra, Girinagar Enclave

PACE LAB CERTIFIED

2023/EKM/1215

Internship Report:

PACELAB

Name: Arathi TV , Anupam KV

College: Sree Narayana Guru College of Engineering & Technology

Degree Program: B-Tech in Computer Science Engineering

Internship Duration: 5 days

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

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5. Conclusion

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
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PAYYANUR, KANNUR

1. Introduction

PACE LAB brought many activities under one umbrella and have been providing support to entrepreneurs, students and faculty members of other technical institutions. Some of them are Makerspace, FAB LAB facilities, customized product manufacturing, assistance to academic projects, internship and training. It also gives opportunity to be an intern for different period of time and thus to equip themselves to face the new challenges.

When unemployability of the engineering graduates became an important concern, PACE LAB strode ahead with career-based and job oriented training. This pioneer institute now contributes largely to skilling the engineering graduates.

The objectives for this internship were to gain hands-on experience in software development, understand the practical applications of gained academic knowledge, and develop professional skills in a real-world setting.

2. Company Overview

PACE LAB was established in the year 2001, with an objective of providing solutions to all hardware and software issues to the industrial and academic personnel. After a decade of appreciable service, its activities have been expanded to the sales, service and training of students, faculty members and researchers.

It kept in pace with advances in the electrical, electronics and computer engineering. Keeping along with the nation-wide entrepreneurial initiatives, PACE LAB provides Makerspace, FAB LAB facilities and technical incubation infrastructure. Customized product manufacturing for industrial and academic institutions, assistance to academic projects of the graduate students, internship and training attract a large number of beneficiaries.

3. Internship Experience

We are excited to share our enriching internship experience as data science interns at Pace Lab, Kochi, a leading provider of data analytics and business intelligence solutions. The internship program allowed us to apply our academic knowledge in a professional setting, enabling us to fully engage in the internship experience.

3.1 Roles and Responsibilities

As data science interns, we had the opportunity to work on a variety of projects under the guidance of experienced data scientists and analysts. Our roles and responsibilities included:

- Collecting, cleaning, and preprocessing data from various sources, including databases, APIs, and CSV files.
- Exploring and visualizing data using tools such as Python, R, and Tableau to gain insights and identify patterns.
- Building predictive models and conducting statistical analyses to solve real-world problems and address business challenges.
- Collaborating with cross-functional teams to communicate findings and recommendations effectively and contribute to data-driven decision-making processes.
- Assisting in the development and deployment of machine learning algorithms and data pipelines to automate processes and improve efficiency.

3.2. Challenges

One significant challenge was adapting to the fast-paced development cycle and learning to manage our tasks efficiently within the sprint framework. Through mentorship and team collaboration, we improved our time management and agile development skills.

3.3. Skills Developed

- Enhanced proficiency in R, Python and Excel.
- Developed an understanding of data analysis.
- Improved problem-solving and teamwork skills.

4. Learning Outcomes

4.1. Practical Application of Data Science Techniques

Through hands-on experience with real-world data and projects, we gained a deeper understanding of data science concepts, methodologies, and tools. We honed our skills in data manipulation, exploratory data analysis, machine learning, and data visualization, enhancing our proficiency as a data scientist.

4.2. Professional Development

Participating in the internship program provided us with valuable opportunities to collaborate with industry professionals, develop effective communication and teamwork skills, and adapt to the dynamic nature of data science projects. The mentorship and guidance we received during the internship contributed significantly to our professional growth and prepared us for future career opportunities in the field of data science.

4.3. Personal Reflection

The internship was an incredibly rewarding experience. It challenged us to step out of our comfort zone and adapt to a professional environment. We have gained not only technical skills but also a better understanding of career aspirations.

5. Conclusion

In conclusion, our internship experience for the data science internship program at Pace Lab was incredibly rewarding and impactful. We gained practical experience and technical skills in data science, allowing us to focus on our professional development. We are grateful for the opportunity to contribute to meaningful projects, learn from experienced mentors, and embark on a journey towards a successful career in data science.

Dr. LEENA A V
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SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

INTERNSHIP DETAILS

ACADEMIC YEAR 2022-2023

Sl No	Name	Industry	Year	Duration
1	ANIRUDH SHAJI	TECHBYHEART	2022-2023	10 days
2	ABHINAV AV			
3	REHAN P			
4	VISWAJEETH P			
5	SREERAJ SN			
6	GOKUL A			
7	ARJUN M			
8	SAFA FATHIMA	TECHMAGHI	2022-2023	5 DAYS
9	MUHAMMED THAJUDHEEN			
10	JERLITT VISAL			
11	ANUPAM KV			
12	SARANG V			
13	FATHIMATHU SAHALABEEVI			
13	HAMNA SHERIN	TORC INFOTECH	2022-2023	7 days
14	AARDRA PRASANTH			
15	DILNA P			
16	NANDANA MV			
17	G P THRISHNA			
18	ANURAG MT			
19	AATHISH R			
20	AMAL MV			
21	ANAGHA ANILKUMAR			
22	RIYA RAJESH			
23	HIMA MURALI K			
24	ANJALI M			
25	GOPIKA PRAMOD KUMAR			
26	SNEHA E			
27	ABHIRAM AV			
28	AKASH SUNILKUMAR			
29	ABHIJITH A			
30	AMAL MV	TORC INFOTECH	2022-2023	7 days
31	NILEENA C			
32	KEERTHANA CV			

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KANNUR

33	SAFA AK			
34	FATHIMATHUL FAMEENABI PV			
35	ASWATHI PI			
36	MUHAMMED ANSAR SAFER			
37	K ATHUL			
38	ABHISHEK K			
39	MUHAMMED ZANIL			
40	SREERAJ SN			
41	SANDRA B			
42	PARTHIP			
43	ANIRUDH SHAJI			
44	ANAGHA PP			
45	MOHAMMED RAZI HAMZA			
46	ANAGHA.K	KELTRON	2022-2023	7 days
47	ANAGHA.M			
48	AVANTIKA.K			
49	HRIDYASREE VALSAN			
50	HRYSHIKA PRADEEP			
51	JEEVA NARAYANAN			
52	KAVYA DEVI.M.K			
53	MANILA MAHESH			
54	MEGHA.P.			
55	NIPUN S ANAND			
56	PALLAVI SWAROOP KUMAR			
57	PARVATHI.K			
58	RAMRITHA RAJEEVAN			
59	SAFA FATHIMA			

FACULTY ADVISOR **HOD** **PRINCIPAL**

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ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

TECHBYHEART
Reg.Office: 54/2967 B1 1st Floor Kohinoor Building Temple Road
Elamkulam, PO, Kadavanthra, Kochi, Kerala 682020, Tel No: 9074 027 038

Ref: TBH/INT/CEH/2023-2024/96/01

Date: 20/05/2023

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. Anirudh** a student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed an internship program on Cyber Security and Ethical Hacking from 10th May 2023 to 20th May 2023 at Techbyheart.

We found him extremely inquisitive and hardworking. He was very much interested in learning the functions of our core division and also willing to put his best efforts and get into the depth of the subjects to understand it better.

We wish him every success in life.

For Techbyheart!

TECHBYHEART 682 020 KOCHI - 20

Human Resource

PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

TECHBYHEART
Reg.Office: 54/2967 B1 1st Floor Kohinoor Building Temple Road
Elamkulam, PO, Kadavanthra, Kochi, Kerala 682020, Tel No: 9074 027 038

Ref:TBH/INT/CEH/2023-2024/114/06

Date: 29/05/2023

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. Abhinav A V** a student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed an internship program on Cyber Security and Ethical Hacking from 15th May 2023 to 29th May 2023 at Techbyheart.

We found him extremely inquisitive and hardworking. He was very much interested in learning the functions of our core division and also willing to put his best efforts and get into the depth of the subjects to understand it better.

We wish him every success in life.

For Techbyheart!

TECHBYHEART 682 020 KOCHI - 20

Human Resource

DR. LEETA A. V.
PRINCIPAL

TECHBYHEART
Reg.Office: 54/2967 B1 1st Floor Kohinoor Building Temple Road
Elamkulam, PO, Kadavanthra, Kochi, Kerala 682020, Tel No: 9074 027 038

Ref: TBH/INT/CEH/2023-2024/114/01

Date:29/05/2023

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. Rehan P** a student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed an internship program on Cyber Security and Ethical Hacking from 15th May 2023 to 29th May 2023 at Techbyheart.

We found him extremely inquisitive and hardworking. He was very much interested in learning the functions of our core division and also willing to put his best efforts and get into the depth of the subjects to understand it better.

We wish him every success in life.

For Techbyheart!

TECHBYHEART 682 020 KOCHI - 20

Human Resource

Dr. LEENA. A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

TECHBYHEART
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Elamkulam, PO, Kadavanthra, Kochi, Kerala 682020, Tel No: 9074 027 038

Ref: TBH/INT/CEH/2023-2024/114/05

Date: 29/05/2023

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. Viswajeeth P** a student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed an internship program on Cyber Security and Ethical Hacking from 15th May 2023 to 29th May 2023 at Techbyheart.

We found him extremely inquisitive and hardworking. He was very much interested in learning the functions of our core division and also willing to put his best efforts and get into the depth of the subjects to understand it better.

We wish him every success in life.

For Techbyheart!

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Human Resource

Dr. LEENA A. V.
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TECHBYHEART
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Ref:TBH/INT/CEH/2023-2024/114/02

Date: 29/05/2023

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. Sreeraj S N** a student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed an internship program on Cyber Security and Ethical Hacking from 15th May 2023 to 29th May 2023 at Techbyheart.

We found him extremely inquisitive and hardworking. He was very much interested in learning the functions of our core division and also willing to put his best efforts and get into the depth of the subjects to understand it better.

We wish him every success in life.

For Techbyheart!

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Human Resource

Dr. LEENA A. V.
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Reg.Office: 54/2967 B1 1st Floor Kohinoor Building Templo Road
Elamkulam, PO, Kadavanthra, Kochi, Kerala 682020, Tel No: 9074 027 038

Ref:TBH/INT/CEH/2023-2024/114/03

Date: 29/05/2023

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. Gokul A** a student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed an internship program on Cyber Security and Ethical Hacking from 15th May 2023 to 29th May 2023 at Techbyheart.

We found him extremely inquisitive and hardworking. He was very much interested in learning the functions of our core division and also willing to put his best efforts and get into the depth of the subjects to understand it better.

We wish him every success in life.

For Techbyheart!

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Human Resource

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KANNUR

TECHBYHEART
Reg.Office: 54/2967 B1 1st Floor Kohinoor Building Temple Road
Elamkulam, PO, Kadavanthra, Kochi, Kerala 682020, Tel No: 9074 027 038

Ref:TBH/INT/CEH/2023-2024/114/04

Date: 29/05/2023

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. Arjun M** a student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed an internship program on Cyber Security and Ethical Hacking from 15th May 2023 to 29th May 2023 at Techbyheart.

We found him extremely inquisitive and hardworking. He was very much interested in learning the functions of our core division and also willing to put his best efforts and get into the depth of the subjects to understand it better.

We wish him every success in life.

For Techbyheart!

TECHBYHEART 682 020 KOCHI - 20

Human Resource

DR. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

Internship Report:
TECHBYHEART

Name: Anirudh Shaji,Abhinav AV,Rehan P,Viswajeeth P,Sreeraj SN,Gokul A,Arjun M

College: Sree Narayana Guru College of Engineering & Technology

Degree Program: B-Tech in Computer Science Engineering

Internship Duration: 2 weeks

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

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Dr. LEENA A V
PRINCIPAL
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PAYYANUR, KANNUR

1. Introduction

The growing importance of cyber security in safeguarding digital assets and information has always fascinated me. Opting for an internship at TechbyHeart, a pioneer in cyber security solutions in Ernakulam, was a deliberate step towards actualizing my career aspirations in this domain.

At its core, TechbyHeart is driven by a passion for creating a safer digital world. The firm leverages cutting-edge technologies and methodologies to stay ahead of cybercriminals, ensuring that their clients' digital assets are protected against the ever-evolving landscape of cyber threats. TechbyHeart's commitment to excellence is evident in their proactive approach to cyber security, continuous learning and adaptation to new challenges, and dedication to client education and empowerment. By fostering a culture of innovation and ethical responsibility, TechbyHeart not only secures digital infrastructures but also contributes to the global effort in advancing cyber security awareness and best practices.

2: Company Overview

TechbyHeart, headquartered in Ernakulam, has carved out a reputation as a trailblazer in the field of cyber security and ethical hacking. This esteemed organization is distinguished by its unwavering commitment to providing cutting-edge security solutions, designed to protect businesses and individuals in the digital age. With a rich heritage of innovation and a forward-thinking approach, TechbyHeart is dedicated to staying ahead of the curve in identifying and neutralizing cyber threats.

Founded by a team of visionary tech enthusiasts, TechbyHeart has grown exponentially, thanks to its adeptness at merging traditional security principles with avant-garde technologies. The company specializes in a broad spectrum of services, including but not limited to vulnerability assessments, penetration testing, security consulting, and the development of comprehensive cyber defense strategies. Its client base spans various sectors, underscoring TechbyHeart's versatility and expertise in addressing unique security challenges. TechbyHeart's impact extends beyond its immediate client engagements. The company is an active participant in the broader cyber security community in Ernakulam and beyond, contributing to initiatives aimed at raising awareness and educating the public about the importance of digital safety. Through its endeavors, TechbyHeart not only secures digital assets but also contributes to building a more secure and resilient digital ecosystem.

3. Objectives

1. Comprehensive Skill Development

- To acquire and enhance technical skills in areas such as vulnerability assessments, penetration testing, network security, and encryption.
- To understand the use and application of various cybersecurity tools and software.

2. Real-World Application and Experience

- To gain hands-on experience by working on live projects, under the guidance of experienced professionals, and contribute to safeguarding digital assets against cyber threats.
- To apply theoretical knowledge in practical settings, enhancing understanding of cyber risk management and security protocols.

3. Professional and Ethical Growth

- To develop a strong ethical foundation necessary for conducting cybersecurity practices, emphasizing the importance of lawful and ethical hacking.
- To cultivate professional skills, including problem-solving, teamwork, and effective communication.

Industry Insights and Trends

- To gain insights into the latest trends, challenges, and advancements in the cybersecurity industry.

- To learn about the regulatory and compliance landscape affecting cybersecurity practices.

5. Networking and Career Opportunities

- To build a professional network by interacting with experts and professionals in the field of cybersecurity.
- To explore career opportunities within TechbyHeart and the broader cybersecurity industry..

4. Learning Outcomes

At Techbyheart, the learning outcomes of cybersecurity encompass acquiring expertise in safeguarding digital assets against cyber threats. Trainees gain skills in Vulnerability Assessment and Penetration Testing (VAPT), understanding the nuances of Cyber Forensics Investigation, and developing strategies for Threat Intelligence. The curriculum is designed to enhance knowledge in Security Assessment, Compromise Assessment, Incident Response, and Cloud Security. These comprehensive training modules aim to empower individuals with the ability to protect online environments effectively, equipping them with the necessary tools and methodologies to anticipate and counteract potential cyber risks applications for real-world scenarios. We learned how to collaborate effectively with team

members, communicate technical concepts, and adapt to the fast-paced and collaborative work environment of a tech company.

5. Conclusion

The internship program on cybersecurity at Techbyheart is designed to equip participants with hands-on skills and knowledge to tackle real-world cyber threats. Through a comprehensive curriculum that includes Vulnerability Assessment, Penetration Testing, Cyber Forensics, and more, interns emerge ready to address and prevent cyber risks. This program not only enhances technical abilities but also fosters a proactive approach to cybersecurity, making it an invaluable experience for those looking to excel in the field.

Dr. LEENA A V
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PAYYANUR, KANNUR

22-23

IF22090766

TECHMAGHI

INTERNSHIP CERTIFICATE

This is to certify that

Safa Fathima

of

SREE NARAYANA GURU COLLEGE OF ENGINEERING &

has successfully completed a 5 day internship in the field of **Machine Learning for Engineers** from 5th September 2022 to 10th September 2022. During this period he/she got exposed to industry relevant softwares like R, Excel etc., and actively participated in hands-on exercises.

17-09-2022
Date

Deepak Rajan
Founder & CEO
Techmaghi

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Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

IF22090309

TECHMAGHI

INTERNSHIP CERTIFICATE

This is to certify that

Muhammed Thajudheen

of

SREE NARAYANA GURU COLLEGE OF ENGINEERING &

has successfully completed a 5 day internship in the field of **Machine Learning for Engineers** from 5th September 2022 to 10th September 2022. During this period he/she got exposed to industry relevant softwares like R, Excel etc., and actively participated in hands-on exercises.

17-09-2022
Date

Deepak Rajan
Founder & CEO
Techmaghi

Dr. LEENA A. V.
PRINCIPAL

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TM22AP1240

TECHMAGHI

INTERNSHIP CERTIFICATE

This is to certify that

Jerlitt Visal

of

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

has successfully completed a 5 day internship in the field of **Android App Development from** 28th September 2022 to 2nd October 2022. During this period he got exposed to industry-relevant softwares like Android Studio, IntelliJ, etc. and actively participated in hands-on activities.

07-10-2022
Date

Deepak Rajan
Founder & CEO
Techmaghi

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANNUR
KANNUR

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TECHMAGHI

INTERNSHIP CERTIFICATE

This is to certify that

ANUPAM K V

of

Sree Narayana Guru College Of Engineering & Technology

has successfully completed a 5 day internship in the field of **Machine Learning For Engineers** from 5th September 2022 to 10th September 2022. During this period he/she got exposed to industry relevant softwares like Matlab - Simulink and actively participated in hands-on exercises.

17-09-2022
Date

Deepak Rajan
Founder & CEO
Techmaghi

PRINCIPAL
KANNUR

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TECHMAGHI

INTERNSHIP CERTIFICATE

This is to certify that

SARANG V

of

Sree Narayana Guru College of Engineering and Technology

has successfully completed a 5 day internship in the field of **Machine Learning For Engineers** from 5th September 2022 to 10th September 2022. During this period he/she got exposed to industry relevant softwares like Matlab - Simulink and actively participated in hands-on exercises.

17-09-2022
Date

Deepak Rajan
Founder & CEO
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PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY
KANNUR

22-23

IF22090766

TECHMAGHI

INTERNSHIP CERTIFICATE

This is to certify that

Fathimathu Sahala Beevi

of

SREE NARAYANA GURU COLLEGE OF ENGINEERING &

has successfully completed a 5 day internship in the field of **Machine Learning for Engineers** from 5th September 2022 to 10th September 2022. During this period he/she got exposed to industry relevant softwares like R, Excel etc., and actively participated in hands-on exercises.

17-09-2022
Date

Deepak Rajan
Founder & CEO
Techmaghi

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Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANNUR
KANNUR

Internship Report:

TECHMAGHI

Name: Sarang V, Muhammed Thajudheen, Jerlitt Visal, Anupam KV

College: Sree Narayana Guru College of Engineering & Technology

Degree Program: B-Tech in Computer Science Engineering

Internship Duration: 5 days

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

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1. Introduction
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Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

1. Introduction

The company's primary focus lies in the core engineering fields, equipping individuals with the skills and knowledge necessary to excel in competitive job market. They are an Ed-Tech startup which focuses mainly on helping people upgrade their skills with the help of technology and expertise by combining the magic of both online and offline learning. They have trained more than 25000 students in the past 8 months and were able to associate with many reputed institutes across the country, including many IITS and NITS.

The objectives for this internship were to gain hands-on experience in software development, understand the practical applications of gained academic knowledge, and develop professional skills in a real-world setting.

2. Company Overview

Techmaghi was established in the year 2021, with an objective of providing solutions to young aspirants the required skill training with various ed-tech facilities.

Techmaghi helps in providing live internship for students that give them a hands on experience that complements their academic journey. The company aims at providing a practical experience that can enhance your journey towards fulfilling career opportunities.

The company's primary focus lies in the core engineering fields, equipping individuals with the skills and knowledge necessary to excel in competitive job market.

3. Internship Experience

We are excited to share our internship experience as participants in the Machine Learning for Engineers internship and Android App development internship programs at Techmaghi. We had the opportunity to immerse ourselves in the world of machine learning, gaining hands-on experience and invaluable insights into applying ML techniques to engineering problems and understanding the methods for Android App development.

3.1 Roles and Responsibilities

As interns in the Machine Learning for Engineers program, we were entrusted with various responsibilities aimed at applying machine learning concepts to engineering challenges. Our roles included:

- Collecting, preprocessing, and analyzing data sets relevant to engineering applications.
- Developing machine learning models using Python libraries such as TensorFlow and Scikit-learn.
- Collaborating with engineers and data scientists to design and implement ML solutions for real-world engineering problems.
- Evaluating model performance and iteratively refining algorithms to achieve desired outcomes.
- Documenting project progress, methodologies, and findings for internal and external stakeholders.

In the Android App Development Program, the roles and responsibilities were aimed at developing practical skills in Android app development while contributing to meaningful projects.

These included:

- Learning and applying fundamental concepts of Android app development, including UI/UX design, data storage, networking, and user authentication.
- Participating in workshops, coding bootcamps, and training sessions led by experienced Android developers to deepen understanding of Android development tools and frameworks.
- Collaborating with project teams to design, develop, and test Android applications for various use cases, industries, and target audiences.
- Implementing features, fixing bugs, and optimizing performance to ensure a smooth and seamless user experience across different Android devices and screen sizes.
- Contributing to code reviews, providing feedback, and learning from the feedback received to improve coding practices and software quality.

3.2. Challenges

One significant challenge was adapting to the fast-paced development cycle and learning to manage our tasks efficiently within the sprint framework. Through mentorship and team collaboration, we improved our time management and agile development skills.

4. Learning Outcomes

4.1. Practical Application

Participating in the Machine Learning for Engineers internship program provided us with practical experience in applying machine learning techniques to real-world engineering problems. We gained insights in data preprocessing, feature engineering, model selection, and evaluation, equipping me with valuable skills for future roles in data-driven engineering.

4.2. Professional Development

The mentorship and guidance we received during the internship contributed significantly to our professional growth and prepared us for future career opportunities in the field of Machine learning or App Development.

4.3. Personal Reflection

The internship was an incredibly rewarding experience. It challenged us to step out of our comfort zone and adapt to a professional environment. We have gained not only technical skills but also a better understanding of career aspirations.

4.4. Industry-Relevant Experience

The internship provided us with valuable industry-relevant experience, exposing us to the challenges and best practices associated with developing Android applications for real-world scenarios. We learned how to collaborate effectively with team members, communicate technical concepts, and adapt to the fast-paced and collaborative work environment of a tech company.

5. Conclusion

In conclusion, our internship experience in the Machine Learning for Engineers and Android App Development Program at Techmaghi was both rewarding and educational. The program provided us with invaluable opportunities to develop practical skills, work on meaningful projects, and gain industry-relevant experience. I am grateful for the support, mentorship, and guidance provided by the Techmaghi team, and I look forward to applying the knowledge and skills gained during my internship to future endeavors in the field of Machine learning and mobile app development .

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

TORC INFOTECH PRIVATE LIMITED

TORC INFOTECH

TORC INFOTECH
OLD ROAD, KALAMASSERY
KOCHI, KERALA

SL NO: TORCAI828

TO WHOMSOEVER IT MAY CONCERN

This is to certify that KEERTHANA C V, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found her a sincere, honest, hardworking, and dedicated student with a professional attitude. She is proactive and is constantly looking to improve her skill set. We also observed that she is skilled at her job.

We wish her every success in all future endeavours.

TORC INFOTECH * KOCHI - 683561 *

ABHI KRISHNA H
CEO

SEAL

DR. LEENA A. V.
PRINCIPAL

TORC INFOTECH

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TORC INFOTECH
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KOCHI, KERALA

SL NO: TORCAI838

TO WHOMSOEVER IT MAY CONCERN

This is to certify that NILEENA C, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found her a sincere, honest, hardworking, and dedicated student with a professional attitude. She is proactive and is constantly looking to improve her skill set. We also observed that she is skilled at her job.

We wish her every success in all future endeavours.

TORC INFOTECH * KOCHI-683561 *

ABHI KRISHNA H
CEO

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KOCHI, KERALA

SL NO: TORCAI805

TO WHOMSOEVER IT MAY CONCERN

This is to certify that AMAL M V, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found him a sincere, honest, hardworking, and dedicated student with a professional attitude. He is proactive and is constantly looking to improve his skill set. We also observed that he is skilled at his job.

We wish him every success in all future endeavours.

TORC INFOTECH * KOCHI - 683561 *

ABHI KRISHNA H
CEO

SEAL

DR. LIGHA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

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SL NO: TORCAI807

TO WHOMSOEVER IT MAY CONCERN

This is to certify that ABHIJITH A, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found him a sincere, honest, hardworking, and dedicated student with a professional attitude. He is proactive and is constantly looking to improve his skill set. We also observed that he is skilled at his job.

We wish him every success in all future endeavours.

TORC INFOTECH
KOCHI - 683561

ABHI KRISHNA H
CEO

SEAL

Dr. LEENA A. V.
PRINCIPAL
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SL NO: TORCAI802

TO WHOMSOEVER IT MAY CONCERN

This is to certify that AKASH SUNILKUMAR, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found him a sincere, honest, hardworking, and dedicated student with a professional attitude. He is proactive and is constantly looking to improve his skill set. We also observed that he is skilled at his job.

We wish him every success in all future endeavours.

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TORC INFOTECH
KOCHI - 683561

ABHI KRISHNA H
CEO

SEAL

Dr. LEENA A. V.
PRINCIPAL

TORC INFOTECH

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TORC INFOTECH
OLD ROAD, KALAMASSERY
KOCHI, KERALA

SL NO: TORCA1803

TO WHOMSOEVER IT MAY CONCERN

This is to certify that MUHAMMED ANSAR SAFER, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found him a sincere, honest, hardworking, and dedicated student with a professional attitude. He is proactive and is constantly looking to improve his skill set. We also observed that he is skilled at his job.

We wish him every success in all future endeavours.

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ABHI KRISHNA H
CEO

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KOCHI, KERALA

SL NO: TORCAI814

TO WHOMSOEVER IT MAY CONCERN

This is to certify that K ATHUL, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found him a sincere, honest, hardworking, and dedicated student with a professional attitude. He is proactive and is constantly looking to improve his skill set. We also observed that he is skilled at his job.

We wish him every success in all future endeavours.

TORC INFOTECH * KOCHI - 683561 *

ABHI KRISHNA H
CEO

SEAL

DR. LEENA A. V.
PRINCIPAL
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SL NO: TORCAI810

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This is to certify that ABHIRAM A V, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found him a sincere, honest, hardworking, and dedicated student with a professional attitude. He is proactive and is constantly looking to improve his skill set. We also observed that he is skilled at his job.

We wish him every success in all future endeavours.

TORC INFOTECH KOCHI - 683561

ABHI KRISHNA H
CEO

SEAL

TORC INFOTECH

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TORC INFOTECH
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KOCHI, KERALA

SL NO: TORCAI822

TO WHOMSOEVER IT MAY CONCERN

This is to certify that SNEHA E, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found her a sincere, honest, hardworking, and dedicated student with a professional attitude. She is proactive and is constantly looking to improve her skill set. We also observed that she is skilled at her job.

We wish her every success in all future endeavours.

TORC INFOTECH * KOCHI - 683561 *

ABHI KRISHNA H
CEO

SEAL

Dr. LEENA A. V.
PRINCIPAL
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KOCHI KERALA

SL NO: TORCAI817

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This is to certify that SREERAJ S N, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR. has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found him a sincere, honest, hardworking, and dedicated student with a professional attitude. He is proactive and is constantly looking to improve his skill set. We also observed that he is skilled at his job.

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CEO

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KOCHI, KERALA

SL NO: TORCAI831

TO WHOMSOEVER IT MAY CONCERN

This is to certify that HAMNA SHERIN, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found her a sincere, honest, hardworking, and dedicated student with a professional attitude. She is proactive and is constantly looking to improve her skill set. We also observed that she is skilled at her job.

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This is to certify that SAFA A K, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found her a sincere, honest, hardworking, and dedicated student with a professional attitude. She is proactive and is constantly looking to improve her skill set. We also observed that she is skilled at her job.

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SL NO: TORCAI835

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This is to certify that FATHIMATHUL FAMEENABI P V, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found her a sincere, honest, hardworking, and dedicated student with a professional attitude. She is proactive and is constantly looking to improve her skill set. We also observed that she is skilled at her job.

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CEO

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SL NO: TORCAI833

TO WHOMSOEVER IT MAY CONCERN

This is to certify that ASWATHI P I, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found her a sincere, honest, hardworking, and dedicated student with a professional attitude. She is proactive and is constantly looking to improve her skill set. We also observed that she is skilled at her job.

We wish her every success in all future endeavours.

TORC INFOTECH KOCHI-683561

ABHI KRISHNA H
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KOCHI, KERALA

SL NO: TORCAI820

TO WHOMSOEVER IT MAY CONCERN

This is to certify that MOHAMMED RAZI HAMZA, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found him a sincere, honest, hardworking, and dedicated student with a professional attitude. He is proactive and is constantly looking to improve his skill set. We also observed that he is skilled at his job.

We wish him every success in all future endeavours.

TORC INFOTECH KOCHI-682561

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SL NO: TORCAI823

TO WHOMSOEVER IT MAY CONCERN

This is to certify that GOPIKA PRAMOD KUMAR, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found her a sincere, honest, hardworking, and dedicated student with a professional attitude. She is proactive and is constantly looking to improve her skill set. We also observed that she is skilled at her job.

We wish her every success in all future endeavours.

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ABHI KRISHNA H
CEO

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KOCHI, KERALA

SL NO: TORCAI840

TO WHOMSOEVER IT MAY CONCERN

This is to certify that ANJALI M, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR. has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found her a sincere, honest, hardworking, and dedicated student with a professional attitude. She is proactive and is constantly looking to improve her skill set. We also observed that she is skilled at her job.

We wish her every success in all future endeavours.

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KOCHI-683561

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KOCHI, KERALA

SL NO: TORCAI82

TO WHOMSOEVER IT MAY CONCERN

This is to certify that HIMA MURALI K, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found her a sincere, honest, hardworking, and dedicated student with a professional attitude. She is proactive and is constantly looking to improve her skill set. We also observed that she is skilled at her job.

We wish her every success in all future endeavours.

TORC INFOTECH PVT LTD KOCHI - 682021

ABHI KRISHNA H
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SL NO: TORCAI827

TO WHOMSOEVER IT MAY CONCERN

This is to certify that RIYA RAJESH, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found her a sincere, honest, hardworking, and dedicated student with a professional attitude. She is proactive and is constantly looking to improve her skill set. We also observed that she is skilled at her job.

We wish her every success in all future endeavours.

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SL NO: TORCAI824

TO WHOMSOEVER IT MAY CONCERN

This is to certify that ANAGHA ANILKUMAR, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found her a sincere, honest, hardworking, and dedicated student with a professional attitude. She is proactive and is constantly looking to improve her skill set. We also observed that she is skilled at her job.

We wish her every success in all future endeavours.

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SL NO: TORCAI805

TO WHOMSOEVER IT MAY CONCERN

This is to certify that AMAL M V, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR. has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found him a sincere, honest, hardworking, and dedicated student with a professional attitude. He is proactive and is constantly looking to improve his skill set. We also observed that he is skilled at his job.

We wish him every success in all future endeavours.

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SL NO: TORCAI806

TO WHOMSOEVER IT MAY CONCERN

This is to certify that AATHISH R, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found him a sincere, honest, hardworking, and dedicated student with a professional attitude. He is proactive and is constantly looking to improve his skill set. We also observed that he is skilled at his job.

We wish him every success in all future endeavours.

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SL NO: TORCAI808

TO WHOMSOEVER IT MAY CONCERN

This is to certify that ANURAG M T, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found him a sincere, honest, hardworking, and dedicated student with a professional attitude. He is proactive and is constantly looking to improve his skill set. We also observed that he is skilled at his job.

We wish him every success in all future endeavours.

TORC INFOTECH KOCHI-683561

ABHI KRISHNA H
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SL NO: TORCAI815

TO WHOMSOEVER IT MAY CONCERN

This is to certify that G P THRISHNA, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found her a sincere, honest, hardworking, and dedicated student with a professional attitude. She is proactive and is constantly looking to improve her skill set. We also observed that she is skilled at her job.

We wish her every success in all future endeavours.

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This is to certify that NANDANA M V, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found her a sincere, honest, hardworking, and dedicated student with a professional attitude. She is proactive and is constantly looking to improve her skill set. We also observed that she is skilled at her job.

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SL NO: TORCAI826

TO WHOMSOEVER IT MAY CONCERN

This is to certify that DILNA P, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found her a sincere, honest, hardworking, and dedicated student with a professional attitude. She is proactive and is constantly looking to improve her skill set. We also observed that she is skilled at her job.

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KOCHI - 683561

ABHI KRISHNA H
CEO

SEAL

DILNA A.V.
PRINCIPAL
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SL NO: TORCA1825

TO WHOMSOEVER IT MAY CONCERN

This is to certify that AARDRA PRASANTH, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found her a sincere, honest, hardworking, and dedicated student with a professional attitude. She is proactive and is constantly looking to improve her skill set. We also observed that she is skilled at her job.

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SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR

A STUDY ON ARTIFICIAL INTELLIGENCE,AT TORC INFOTECH PVT LTD , KOCHI

Submitted to
HOD (CSE DEPARTMENT)

In accordance to Internship program

Submitted by

HAMNA SHERIN, AARDRA PRASANTH,DILNA P,NANDANA MV,G P THRISHNA,ANURAG MT,AATHISH R,AMAL MV,ANAGHA ANILKUMAR,RIYA RAJESH,HIMA MUIRALI,ANJALI M,GOPIKA PRAMODKUMAR,SNEHA E,ABHIRAM AV,AKASH SUNILKUMAR,ABHIJITH A, NILEENA C,KEERTHANA CV,SAFA AK,FATHIMATHUL FAMEENABI,ASWATHI PI,MUHAMMED ANSAR SAFEER,K ATHU,ABHISHEK K,MUHAMMED ZENIL,SREERAJ SN,SANDRA B,PARTHIP,ANIRUDH,ANAGHA,MOHAMMED RAZI

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYANNUR

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

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1. Introduction
2. Company Overview
3. Vision, Mission and Motto
4. Learning Outcomes
5. Conclusion

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

1. Introduction

Torc Infotech, established in 2017 and based in Kochi, India, specializes in leveraging digital potential efficiently. It focuses on innovating technology solutions to enhance customer experiences and foster the adoption of digitalization and automation technology practices. The company prides itself on its ability to create real relationships with clients and provide comprehensive services, including business analytics, platform development, and advisory services, aimed at aiding businesses in their digitization and automation endeavors.

2: Company Overview

Established in 2017 and headquartered in Kochi, India, Torc Infotech is at the forefront of digital and automation technology solutions, emphasizing customer experience enhancement. It offers a broad spectrum of services including business analytics, platform development, and specialized advisory for navigating digitization. Torc Infotech is dedicated to forging strong client relationships, aiming to exceed expectations with innovative solutions. Their approach is characterized by a commitment to high performance, quality, and functionality, striving to be a creative and technological leader in the digital sphere.

3. VISION MISSION AND MOTTO

- We aim at becoming a leading agency providing unique, identifiable and remarkable solutions and setting new standards for creativity and success in the business sphere
- In present times, a business needs to have an online presence. We want to help businesses build that presence and grow by providing them with solutions using ever-evolving technology and creativity.
- High performance, High quality and High functionality.

4. Learning Outcomes

Understanding of AI Concepts: Gained a solid foundation in AI principles, including machine learning, deep learning, natural language processing (NLP), and computer vision. This includes both theoretical knowledge and practical applications. Proficiency in Programming Languages: Enhanced proficiency in AI-relevant programming languages, especially Python, given its importance in the AI community for its simplicity and the vast array of libraries like TensorFlow, PyTorch, and Keras.

Machine Learning Techniques: Learned to implement various machine learning algorithms, including supervised and unsupervised learning, decision trees, neural networks, and reinforcement learning, applying them to solve real-world problems.

Data Handling and Analysis: Developed skills in data preprocessing, exploration, and visualization to understand the underlying patterns and to prepare data for machine learning models.

AI Project Lifecycle: Understood the entire lifecycle of an AI project, from problem definition, data collection, model selection, training, evaluation, to deployment.

Use of AI Tools and Platforms: Gained hands-on experience with AI tools and cloud platforms, which are essential for developing and deploying AI models efficiently.

Soft Skills Developed

Problem-Solving: Enhanced ability to approach complex problems, break them down into manageable parts, and devise effective solutions.

Critical Thinking: Improved critical thinking skills, particularly in evaluating AI models, understanding their limitations, and identifying potential biases.

Teamwork and Collaboration: Learned to work effectively in diverse teams, collaborating with other interns and professionals, which is vital for the success of AI projects.

Adaptability: Developed adaptability in learning and applying new technologies and methodologies as the field of AI is rapidly evolving.

Communication: Improved ability to communicate complex AI concepts and project results to both technical and non-technical audiences, a key skill in cross-functional teams.

Ethical Considerations in AI: Understood the importance of ethics in AI, including issues related to bias, privacy, and the societal impact of AI technologies.

AI Project Lifecycle: Understood the entire lifecycle of an AI project, from problem definition, data collection, model selection, training, evaluation, to deployment.

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Ethical Considerations in AI: Understood the importance of ethics in AI, including issues related to bias, privacy, and the societal impact of AI technologies.

5. Conclusion

As my internship at TORC INFOTECH comes to an end, I reflect on an incredibly enriching and transformative experience that has significantly advanced my understanding and skills in the field of Artificial Intelligence (AI). This journey has not only equipped me with a robust set of technical skills but also instilled in me a deep appreciation for the complexities and ethical considerations involved in AI development and deployment.

Throughout this internship, I had the opportunity to delve into the core of AI technologies, gaining hands-on experience with machine learning algorithms, data analysis techniques, and programming in Python. The projects I participated in challenged me to apply theoretical knowledge to real-world problems, reinforcing the practical applications of AI in transforming industries and society.

One of the most valuable aspects of my time at TORC INFOTECH was the collaborative environment, where teamwork and communication were paramount. Working alongside seasoned professionals and fellow interns, I was able to expand my perspective on AI's potential, encountering diverse approaches and solutions to complex challenges. This collaborative experience has honed my ability to work effectively in team settings, a skill that is indispensable in the interdisciplinary field of AI.

Dr. LEENA A V
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PAYYANUR, KANNUR

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

INTERNSHIP DETAILS

ACADEMIC YEAR 2021-2022

Sl No	Name	Industry	Year	Duration
1	DILNA P	STROKX TECHNOLOGIES	2021-2022	10 DAYS
2	SRAVAN R	ZINDOT TECHNOLOGIES	2021-2022	10 DAYS
3	MUHAMMAD JISHAN PTK			
4	MISHAB CP			
5	MUHAMMED ZAHID APAMAR RAJENDRAN			
6	ANAGHA.K	IBAND Technologies	2021-2022	15 DAYS
7	ANAGHA.M			
8	AVANTIKA.K			
9	HRIDYASREE VALSAN			
10	HRYSHIKA PRADEEP			
11	JEEVA NARAYANAN			
12	KAVYA DEVI.M.K			
13	MANILA MAHESH			
14	MEGHA.P.			
15	NIPUN S ANAND			
16	ANAGHA.K			
17	PALLAVI SWAROOP KUMAR			
18	PARVATHI.K			
19	RAMRITHA RAJEEVAN			
21	SAFA FATHIMA			
22	ARCHANA CHITHRAN			
28	AKASH SUNILKUMAR			
29	ABHIJITH A			

Dr. LEENA A V
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PAYYANUR, KANNUR

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10	HRYSHIKA PRADEEP			
11	JEEVA NARAYANAN			
12	KAVYA DEVI.M.K			
13	MANILA MAHESH			
14	MEGHA.P.			
15	NIPUN S ANAND			
16	ANAGHA.K			
17	PALLAVI SWAROOP KUMAR			
18	PARVATHI.K			
19	RAMRITHA RAJEEVAN			
21	SAFA FATHIMA			
22	ARCHANA CHITHRAN			
23	AKASH SUNILKUMAR			
24	ABHIJITH A			
25	AMAL MV	TORC INFOTECH	2021-2022	7 days
26	NILEENA C			
27	KEERTHANA CV			
28	SAFA AK			
29	FATHIMATHUL FAMEENABI PV			

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KANNUR

31	NILEENA C			
32	KEERTHANA CV			
33	SAFA AK			
34	FATHIMATHUL FAMEENABI PV			
35	ASWATHI PI			
36	MUHAMMED ANSAR SAFER			
37	K ATHUL			
38	ABHISHEK K			
39	MUHAMMED ZANIL			
40	SREERAJ SN			
41	SANDRA B			
42	PARTHIP			
43	ANIRUDH SHAJI			
44	ANAGHA PP			
45	MOHAMMED RAZI HAMZA			

For

FACULTY ADVISOR

HOD

PRINCIPAL

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

STROKX TECHNOLOGIES

CERTIFICATE OF COMPLETION

Certificate No: ST/PY/2021/50

This certifies that

MS. DILNA P

has successfully completed the internship program on

Python Development

for a period of **TEN** days

which was completed on 24th September 2021

28/09/2021
Date

Abhijith TJ (Director)

Dr. LEENA
PRINCIPA
SREE NARAYANA GURU
ENGINEERING & TECHNOLO
KANNUR

A TRAINING PROGRAM ON PYTHON DEVELOPMENT AT STROKX TECHNOLOGIES

Submitted to
HOD (CSE DEPARTMENT)

In accordance to Internship

Submitted by
DILNA P

DEPARTMENT OF COMPUTER SCIENCE

AND ENGINEERING

SREE NARAYANA GURU COLLEGE

OF ENGINEERING & TECHNOLOGY,

PAYANNUR

Dr. LEENA A V
PRINCIPAL
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ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

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2. ADVANCED PYHTON CONCEPTS

3. WEB DEVELOPMENT

4. PROJECT WORK COLLABRATION

5. PRESENTATION AND EVALUATION

6. CONCLUSION

Dr. LEENA A V
PRINCIPAL
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PAYYANUR, KANNUR

INTRODUCTION:

This internship report encapsulates my experience during a 10-day Python development program at Strokx Technologies. Strokx Technologies is renowned for its innovative solutions in software development, particularly focusing on Python-based applications. The program aimed to provide interns with hands-on experience in Python programming and exposure to real-world projects.

1: Orientation and Introduction to Python

The first day commenced with an orientation session, where the program's structure and objectives were outlined. We were introduced to the basics of Python programming, including syntax, data types, variables, and control structures. Practical exercises helped reinforce theoretical concepts, laying a solid foundation for the days ahead.

2: Advanced Python Concepts

Subsequent days delved into advanced Python concepts such as functions, modules, and packages. We explored object-oriented programming (OOP) principles, learning how to create classes, objects, and inheritance. Hands-on projects challenged us to apply these concepts, enhancing our problem-solving skills and fostering creativity.

3: Web Development with Python

In the latter half of the program, we shifted our focus to web development using Python frameworks like Flask and Django. Through interactive sessions and guided tutorials, we gained insights into building dynamic web applications, handling HTTP requests, and integrating databases. Working on mini-projects allowed us to grasp the intricacies of web development and understand its practical applications.

4: Project Work and Collaboration

As the program progressed, we were divided into teams and assigned a real-world project to work on. Collaborating with team members, we applied our newfound knowledge to develop solutions tailored to specific requirements.

Mentors provided guidance and feedback, encouraging us to implement best practices and refine our code.

5: Presentation and Evaluation

The final day culminated in project presentations, where each team showcased their accomplishments. It was a rewarding experience to demonstrate our projects and receive constructive feedback from mentors and peers. The program concluded with an evaluation session, where our performance and contributions were assessed, and certificates were awarded to successful participants.

6: Conclusion:

In conclusion, the 10-day Python development program at Strokx Technologies was an enriching experience that provided valuable insights into the world of Python programming. From mastering basic concepts to building real-world applications, the program equipped us with the skills and confidence needed to embark on a successful career in software development. I am grateful for the opportunity to learn from industry experts and collaborate with talented peers, and I look forward to applying my newfound knowledge in future endeavors.

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PAYYANUR, KANNUR

2021 - 22

ZINDOT TECHNOLOGIES

zindot.in

CERTIFICATE

This is to certify that

SRAVAN R

student of

SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY

has completed 10 days internship training in **ROBOTICS** from 5th November 2021 at ZINDOT TECHNOLOGIES, Kochi. During this intern period, we found him/her a sincere, honest, hardworking, dedicated student with a professional attitude and very good professional knowledge.
We wish you every success in all future endeavours.

Date : 18 NOVEMBER 2021

Director
ZINDOT TECHNOLOGIES

ZINDOT TECHNOLOGIES KOCHI-682 034

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CERTIFICATE

This is to certify that

MUHAMMAD JISHAN PTK

student of

SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY

has completed 10 days internship training in **CYBER SECURITY** from 2nd December 2021 at ZINDOT TECHNOLOGIES, Kochi. During this intern period, we found him/her a sincere, honest, hardworking, dedicated student with a professional attitude and very good professional knowledge.

We wish you every success in all future endeavours.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

Date : 15 DECEMBER 2021

Director
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MISHAB C P

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We wish you every success in all future endeavours.

Date : 15 DECEMBER 2021

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MUHAMMED ZAHID AP

student of

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has completed 10 days internship training in **CYBER SECURITY** from 2nd December 2021 at ZINDOT TECHNOLOGIES, Kochi. During this intern period, we found him/her a sincere, honest, hardworking, dedicated student with a professional attitude and very good professional knowledge.

We wish you every success in all future endeavours.

Date : 15 DECEMBER 2021

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AMAR RAJENDRAN

student of

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has completed 10 days internship training in **ROBOTICS** from 5th November 2021 at ZINDOT TECHNOLOGIES, Kochi. During this intern period, we found him/her a sincere, honest, hardworking, dedicated student with a professional attitude and very good professional knowledge.
We wish you every success in all future endeavours.

Dr. LEENA A. V.
PRINCIPAL
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KANNUR

Date : 18 NOVEMBER 2021

Director
ZINDOT TECHNOLOGIES

ZINDOT TECHNOLOGIES
KOCHI-682 034

A STUDY ON ROBOTICS FROM ZINDOT TECHNOLOGIES, KOCHI

Submitted to
HOD (CSE DEPARTMENT)

In accordance to Internship program

Submitted by
SRAVAN R, MUHAMMED JISHAN PTK, MISHAB CP, MUHAMMED ZAHID, APAMAR RAJENDRAN

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

Dr. LEENA A V
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7. HANDS-ON PROJECTS

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9. CONCLUSION

10. RECOMMENDATIONS AND FUTURE DIRECTIONS

Dr. LEENA A V
PRINCIPAL
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1: INTRODUCTION

Zindot Technologies, headquartered in the bustling city of Kochi, Kerala, stands as a testament to innovation and technological excellence. Established with a vision to pioneer advancements in software development, artificial intelligence, and robotics, Zindot has become synonymous with cutting-edge solutions and transformative technology. From its humble beginnings, Zindot has grown into a dynamic force in the technology sector, leveraging its expertise to address the complex challenges faced by businesses across diverse industries. With a focus on delivering value-driven solutions tailored to meet the unique needs of its clients, Zindot has earned a reputation for reliability, quality, and innovation. The success of Zindot can be attributed to its unwavering commitment to excellence and its ability to stay at the forefront of technological trends. By embracing emerging technologies and fostering a culture of continuous learning and innovation, Zindot remains agile and adaptable in an ever-evolving landscape. One of the key pillars of Zindot's success is its team of talented professionals, who bring a wealth of experience and expertise to the table. Comprising skilled engineers, visionary developers, data scientists, and seasoned researchers, the Zindot team is united by a shared passion for technology and a drive to make a meaningful impact. As Zindot continues to chart new territories and push the boundaries of innovation, its commitment to excellence remains unwavering. With a steadfast focus on delivering value, driving innovation, and making a positive impact, Zindot Technologies is poised to shape the future of technology and redefine the possibilities of tomorrow.

2: SERVICES, MISSION AND VISION

Zindot Technologies offers a comprehensive range of services aimed at driving innovation, solving complex problems, and delivering impactful solutions in the technology domain. Our core services include:

Software Development: We specialize in developing custom software solutions tailored to meet the unique needs and challenges of our clients across various industries.

Artificial Intelligence: Leveraging the power of AI, we create intelligent systems and applications that automate processes, optimize workflows, and unlock valuable insights from data.

Robotics: We design and implement robotic solutions for diverse applications, from industrial automation and autonomous vehicles to healthcare and consumer electronics.

Data Analytics: Our data analytics services empower organizations to harness the full potential of their data, enabling data-driven decision-making and strategic insights.

Consulting: We provide expert consulting services to help businesses navigate the complexities of technology adoption, digital transformation, and innovation strategy.

Mission:

Our mission at Zindot Technologies is to empower organizations to thrive in the digital age by leveraging cutting-edge technology and innovation. We are committed to delivering superior solutions that drive business growth, enhance efficiency, and create lasting value for our clients and partners. Through our relentless pursuit of excellence, integrity, and customer satisfaction, we strive to be a trusted partner and a catalyst for positive change in the technology landscape.

Vision:

Our vision at Zindot Technologies is to be a global leader in technological innovation, known for our pioneering solutions, unmatched expertise, and unwavering commitment to excellence.

3: Objectives:

1: Innovation:

Zindot Technologies aims to foster a culture of innovation, creativity, and continuous improvement. The company seeks to push the boundaries of technological advancement by exploring new ideas, experimenting with emerging technologies, and developing innovative solutions to address evolving challenges.

2: Customer Satisfaction:

Zindot Technologies is committed to delivering exceptional value and service to its clients. The company strives to understand and exceed customer expectations by providing high-quality solutions that meet their needs, solve their problems, and drive measurable outcomes.

3: Technology Leadership:

Zindot Technologies endeavors to maintain its position as a leader in the technology sector. The company aims to stay at the forefront of technological trends, advancements, and best practices, positioning itself as a trusted advisor and expert resource for clients and partners.

4: Employee Development:

Zindot Technologies recognizes the importance of its employees as the driving force behind its success. The company is dedicated to nurturing talent, fostering professional growth, and creating a supportive work environment where employees can thrive, innovate, and contribute their best.

5: Social Responsibility:

Zindot Technologies is committed to corporate social responsibility and ethical business practices. The company seeks to make a positive impact on society and the environment by supporting community initiatives, promoting diversity and inclusion, and conducting business in an ethical and sustainable manner.

6: Business Growth:

Zindot Technologies aims to achieve sustainable growth and profitability while maintaining financial stability and operational excellence. The company seeks

opportunities for expansion, diversification, and strategic partnerships to enhance its market presence and competitiveness.

4: Internship Training Program Structure

Zindot Technologies takes pride in offering a comprehensive and structured Internship Training Program designed to provide participants with hands-on experience, practical skills, and industry exposure. The program aims to bridge the gap between academic learning and real-world application, preparing interns for successful careers in the technology sector. The following outlines the key components and structure of the Internship Training Program at Zindot Technologies: The internship training program spanned over 10 days and comprised a blend of theoretical sessions, hands-on workshops, and project work. The curriculum was designed to cover key concepts in robotics, including robot kinematics, and machine learning techniques.

5: Robotics in Industry: Trends and Applications

Students were introduced to the latest trends and applications of robotics in various industries, including manufacturing, healthcare, agriculture, and logistics. Emphasis was placed on understanding the role of robotics in improving efficiency, safety, and productivity in diverse settings. Robotics has emerged as a transformative force across various industries, revolutionizing traditional processes and unlocking new possibilities. In manufacturing, robotics automation enhances efficiency and precision, leading to increased productivity and cost savings. In healthcare, surgical robots enable minimally invasive procedures, improving patient outcomes and reducing recovery times. Logistics and warehousing benefit from robotic systems for inventory management and order fulfillment, streamlining operations and enhancing supply chain efficiency. Agriculture embraces robotics for tasks like precision farming and autonomous harvesting, optimizing crop yields and resource utilization. As technology advances, trends like collaborative robotics, artificial intelligence, and internet of things (IoT) integration are shaping the future of robotics, paving the way for safer, smarter, and more versatile applications across industries. Robotics continues to redefine industry standards, driving innovation and ushering in a new era of automation and efficiency.

6: Technical Workshops and Sessions

Technical workshops were conducted by industry experts to familiarize students with robotics hardware and software platforms. Topics covered included ROS (Robot Operating System), sensor integration, motion planning, and robot simulation tools. Technical workshops at Zindot Technologies were led by industry experts to acquaint students with robotics hardware and software platforms. These sessions delved into crucial topics such as ROS (Robot Operating System), sensor integration, motion planning, and robot simulation tools. Through hands-on demonstrations and interactive learning, students gained practical insights into the intricacies of robotic systems, preparing them for real-world applications. The workshops provided a solid foundation for students to understand the complexities of robotics technology and equipped them with the skills necessary to tackle challenges in this dynamic field.

7: Hands-On Projects

During the internship at Zindot Technologies, students engaged in hands-on projects to translate theoretical concepts into tangible solutions. These projects encompassed designing and programming robotic arms for pick-and-place tasks, leveraging advanced algorithms for autonomous navigation via SLAM (Simultaneous Localization and Mapping), and implementing computer vision techniques for object detection. Through these immersive experiences, students honed their problem-solving skills, enhanced their understanding of robotics principles, and gained valuable practical expertise. Working collaboratively in project teams, students applied creativity and innovation to overcome challenges, resulting in the development of functional prototypes and solutions with real-world applicability. These hands-on projects not only reinforced theoretical learning but also empowered students to explore the full potential of robotics technology in addressing complex challenges across diverse domains..

8. Challenges and Learning Experiences

During the program at Zindot Technologies, students faced a spectrum of challenges including debugging hardware issues, optimizing algorithms for real-time performance, and troubleshooting communication protocols. These hurdles served as invaluable learning opportunities, enabling students to hone their problem-solving skills and cultivate resilience in the face of technical obstacles. By grappling with complex problems firsthand, students gained practical insights into the intricacies of robotics technology and learned to adapt and innovate in dynamic environments. Moreover, these challenges fostered collaboration and teamwork as students collaborated to overcome obstacles, shared insights, and supported one another. Ultimately, the learning experiences derived from tackling these challenges equipped students with the skills, knowledge, and confidence needed to navigate the complexities of real-world technology projects and excel in their future careers.

10. Recommendations and Future Directions

Looking ahead, expanding the internship program at Zindot Technologies to encompass advanced topics in robotics like humanoid robotics, swarm robotics, and reinforcement learning is highly recommended. This expansion would provide interns with exposure to cutting-edge technologies and deepen their understanding of emerging trends in the field. Moreover, forging partnerships with universities and research institutions can enrich the program by facilitating access to expertise, resources, and collaborative opportunities. These partnerships can foster a vibrant ecosystem of learning, innovation, and knowledge exchange, benefiting both interns and the broader robotics community. By embracing these recommendations and embracing a forward-thinking approach, Zindot Technologies can further elevate its internship program, cultivate future leaders in robotics, and contribute to the advancement of the field on a global scale.

10. Recommendations and Future Directions

Looking ahead, expanding the internship program at Zindot Technologies to encompass advanced topics in robotics like humanoid robotics, swarm robotics, and reinforcement learning is highly recommended. This expansion would provide interns with exposure to cutting-edge technologies and deepen their understanding of emerging trends in the field. Moreover, forging partnerships with universities and research institutions can enrich the program by facilitating access to expertise, resources, and collaborative opportunities. These partnerships can foster a vibrant ecosystem of learning, innovation, and knowledge exchange, benefiting both interns and the broader robotics community. By embracing these recommendations and embracing a forward-thinking approach, Zindot Technologies can further elevate its internship program, cultivate future leaders in robotics, and contribute to the advancement of the field on a global scale.

9. Conclusion

The Internship Training Program on Robotics at Zindot Technologies has been an enriching and transformative experience. Through a blend of theoretical knowledge and practical application, we have gained a comprehensive understanding of robotics technologies and their diverse applications across industries. The hands-on projects and workshops offered invaluable opportunities to apply theoretical concepts in real-world scenarios, enhancing our problem-solving skills and technical proficiency. As we conclude the program, we feel well-equipped and confident to embark on future careers in the field of robotics, armed with the practical experience and knowledge acquired during our time at Zindot Technologies. We extend our heartfelt gratitude to the mentors, instructors, and the entire team at Zindot for their guidance, support, and encouragement throughout this journey.

Dr. LEENA A V
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ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

iBAND Technologies

14/01/2022

CERTIFICATE

This is to certify that ANAGHA K, having the university register number : SNC19CS008 , B.Tech Computer Science Engineering student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed internship training program in ' Robotics & Embedded Systems' at IBAND Technologies, Kochi from 29/12/2021 to 14/01/2022.

For IBAND Technologies

HR Manager

Dr. LEENA A. V.
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KANNUR

iBAND Technologies

14/01/2022

CERTIFICATE

This is to certify that Anagha M ,having the university register number : SNC19CS009 , B.Tech Computer Science Engineering student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed internship training program in ' Robotics & Embedded Systems' at IBAND Technologies, Kochi from 29/12/2021 to 14/01/2022.

For IBAND Technologies

HR Manager

IBAND TECHNOLOGIES KOCHI

Dr. [illegible] A. V.
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This is to certify that AVANTIKA K , having the university register number : SNC19CS011 , B.Tech Computer Science Engineering student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed internship training program in ' Robotics & Embedded Systems' at IBAND Technologies, Kochi from 29/12/2021 to 14/01/2022.

For IBAND Technologies

HR Manager

IBAND TECHNOLOGIES KOCHI

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This is to certify that Hridyasree Valsan, having the university register number : SNC19CS014 , B.Tech Computer Science Engineering student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed internship training program in ' Robotics & Embedded Systems' at IBAND Technologies, Kochi from 29/12/2021 to 14/01/2022.

For IBAND Technologies

HR Manager

IBAND TECHNOLOGIES KOCHI

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This is to certify that Hryshika Pradeep, having the university register number : SNC19CS015 , B.Tech Computer Science Engineering student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed internship training program in ' Robotics & Embedded Systems' at IBAND Technologies, Kochi from 29/12/2021 to 14/01/2022.

For IBAND Technologies

HR Manager

IBAND TECHNOLOGIES KOCHI

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CERTIFICATE

This is to certify that KAVYA DEVI M K,having the university register number : SNC19CS017 , B.Tech Computer Science Engineering student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed internship training program in ' Robotics & Embedded Systems' at IBAND Technologies, Kochi from 29/12/2021 to 14/01/2022.

For IBAND Technologies

HR Manager

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CERTIFICATE

This is to certify that Manila Mahesh ,having the university register number : SNC19CS018 , B.Tech Computer Science Engineering student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed internship training program in ' Robotics & Embedded Systems' at IBAND Technologies, Kochi from 29/12/2021 to 14/01/2022.

For IBAND Technologies

HR Manager

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14/01/2022

CERTIFICATE

This is to certify that Megha P K, having the university register number : SNC19CS019 , B.Tech Computer Science Engineering student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed internship training program in ' Robotics & Embedded Systems' at IBAND Technologies, Kochi from 29/12/2021 to 14/01/2022.

Dr. LEENA A. V.
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HR Manager

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14/01/2022

CERTIFICATE

This is to certify that Nipun S Anand, having the university register number : SNC19CS024 , B.Tech Computer Science Engineering student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed internship training program in ' Robotics & Embedded Systems' at IBAND Technologies, Kochi from 29/12/2021 to 14/01/2022.

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14/01/2022

CERTIFICATE

This is to certify that ARCHANA CHITHRAN K, having the university register number : SNC19CS010 , B.Tech Computer Science Engineering student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed internship training program in ' Robotics & Embedded Systems' at IBAND Technologies, Kochi from 29/12/2021 to 14/01/2022.

For IBAND Technologies

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14/01/2022

CERTIFICATE

This is to certify that RAMRITHA RAJEEVAN , having the university register number : SNC19CS027 , B.Tech Computer Science Engineering student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed internship training program in ' Robotics & Embedded Systems' at IBAND Technologies, Kochi from 29/12/2021 to 14/01/2022.

For IBAND Technologies

HR Manager

IBAND TECHNOLOGIES KOCHI

DR. LEFNY A. V. PRINCIPAL SREE NARAYANAGURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR KANNUR

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Technologies

14/01/2022

CERTIFICATE

This is to certify that Safa Fathima, having the university register number : SNC19CS028 , B.Tech Computer Science Engineering student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed internship training program in ' Robotics & Embedded Systems' at IBAND Technologies, Kochi from 29/12/2021 to 14/01/2022.

For IBAND Technologies

HR Manager

IBAND TECHNOLOGIES KOCHI

A STUDY ON ROBOTICS AND EMBEDDED SYSTEMS AT IBAND TECHNOLGY, KOCHI

Submitted to
HOD (CSEDEPARTMENT)

In accordance to industrial visit

Submitted by

ANAGHA K, ANGHA M, AVANTHIKA K,HRIDYASREE VALSAN,HRISHIKA PRADEEP,JEEVA NARAYANAN,KAVYA DEVI MK,MANILA MAHESH,MEGHA P,NIPUN S ANAND,PALLAVI SWAROOP KUMAR, PARVATHI K,RAMRUTHA RAJEEVAN,SAFA FATHIMA,ARCHANA CHITHRAN,AKASH

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

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PAYYANUR, KANNUR

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3. SERVICES, VISION AND MISION

4. MANUFACTURING UNITS

5. ORGANISATIONSET UP

6. OBJECTIVE

7. PRODUCTS

8. CONCLUSION

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
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PAYYANUR, KANNUR

1.INTRODUCTION

APL Apollo Tubes Limited stands as a prominent player in the steel industry, recognized for its significant contributions to India's infrastructural development. Established with a vision to revolutionize the steel tubing sector, APL Apollo Tubes Limited has emerged as a leader in the manufacturing of Structural Steel Tubes in India. With an impressive capacity of producing 3.6 Million Tonnes per annum, APL Apollo Tubes Limited has set new benchmarks for production efficiency and quality standards in the industry. The company's state-of-the-art manufacturing facilities utilize cutting-edge technology and adhere to stringent quality control measures to ensure the delivery of superior-grade steel products.The company's commitment to excellence is further underscored by its extensive distribution network, which encompasses warehouses and branch offices strategically located in 29 cities across India. Additionally, APL Apollo Tubes Limited has established a global presence with operations in 20 countries worldwide, catering to diverse markets and fulfilling the steel requirements of international clients.Driven by a relentless pursuit of innovation and customer satisfaction, APL Apollo Tubes Limited continues to play a pivotal role in shaping India's infrastructural landscape. Through its comprehensive product portfolio, unparalleled production capabilities, and widespread distribution network, the company remains steadfast in its mission to contribute to the nation's growth and development.

2.HISTORY

APL Apollo Tubes Limited commenced its journey in 1994-95 with the establishment of its first manufacturing plant in Sikandrabad, Ghaziabad, marking the inception of its remarkable venture in the steel industry. Over the years, the company has demonstrated a steadfast commitment to quality and innovation, leading to significant milestones and expansions. In 2000-02, APL Apollo Tubes Limited commissioned a new Galvanizing plant, received ISI Certification, and was listed on the Stock Exchanges (BSE & NSE), solidifying its position in the market. Subsequently, in 2003-04, the company further bolstered its manufacturing capabilities by commissioning a new tube mill and modern Gallium mill, alongside achieving ISO 9001:2000 certification. Notably, APL Apollo Tubes Limited has consistently demonstrated its innovative spirit, becoming the first in India to launch Pre-Galvanized pipes and developing in-house Hollow Sections across various sizes in 2009-10. As part of its strategic expansion, the company acquired Apollo Metalex Private Limited and Shri Lakshmi Metal Udyog Limited, fortifying its market presence. Moreover, APL Apollo Tubes Limited underwent a name change to reflect its evolving identity and received UL, CE, SGF France Certifications, and other approvals.

The acquisition of Lloyds Line Pipes Limited near Mumbai further enhanced its manufacturing capabilities in 2013-14. APL Apollo Tubes Limited continued its trajectory of growth by procuring CRFH Coils from JSW Steel in 2015, expanding its product range to include Door sections, Window sections, and Railing tubes. The company reached a significant milestone in 2016-17 by becoming the first in India to achieve a capacity of 1 MTPA in steel pipe production, underscoring its manufacturing prowess. Continuing its commitment to technological advancement, APL Apollo Tubes Limited established India's first-ever Direct Forming Technology Line in Hosur and commissioned a Greenfield facility in Raipur & Chhattisgarh with Direct Forming Technology in 2018-19. APL Apollo Tubes Limited achieved remarkable sales volume and market share in FY20, consolidating its position as an industry leader. Through over three decades of relentless pursuit of excellence and continuous improvement, APL Apollo Tubes Limited has remained at the forefront of revolutionizing the Structural Steel Tubes manufacturing industry.

3.SERVICES, MISSION AND VISION

APL Apollo Tubes Limited is India's largest Structural Steel Tubing Company with an extremely strong local presence, thanks to our philosophy of Make in India, extensive distribution network and world class quality. Headquartered at Delhi NCR APL Apollo, with its world-class facilities, widely spread 3-tier distribution network, and over 800 dealers, is committed to strengthening India's infrastructural backbone with its structural tubes and hollow sections.

Mission: To lead the process of transformation of commodity to value added products through innovation and technology

Vision: To be a global leader and high performing organization recognized for excellence, governance, customer delight, and building long term relationships with all partners.

Values: Leadership by Example, Commitment, Trust, Innovation, Integrity

Our multi-product offerings that include over 1,100 varieties of Pre- Galvanized Tubes, Structural Steel Tubes, Galvanized Tubes, MS Black Pipes and Hollow Sections, making APL Apollo is one of leading branded steel products manufacturers in India.

4.MANUFACTURING UNITS

With our state-of-the-art manufacturing facilities, APL Apollo serves as a 'one-stop shop' for a wide spectrum of steel products. We operate eleven world-class manufacturing units with a total capacity of 3.6 Million MTPA, strategically located in Sikandrabad (3 units), Malur, Bengaluru, Hosur, Dujana, Raipur (2 units), Murbad, and Hyderabad.

APL Apollo has started its new factory in UAE with an annual capacity in excess of 400k tons with six r range up to 300 x 300 x 12.7 mm in various specifications like EN 10219 S 355 J2H / ASTM A 500 Grade C etc. For inquiry pls write us atuae@aplapollo.com

5.ORGANISATION SET UP

Production:

APL Apollo Tubes Limited boasts a state-of-the-art production process that integrates cutting-edge technology and stringent quality control measures. This meticulous approach ensures the delivery of superior-quality steel products to meet the diverse needs of customers. From the selection of raw materials to the final manufacturing stages, the company emphasizes precision and efficiency, setting high standards for product excellence.

Distribution:

In parallel to its advanced production capabilities, APL Apollo Tubes Limited operates a robust distribution network that serves as a cornerstone for efficient customer reach. With strategically located warehouses and branch offices spanning across diverse geographical locations, the company ensures prompt and seamless ful fillment of customer requirements. This extensive distribution infrastructure enables APL Apollo Tubes Limited to cater to its customers effectively, both domestically and internationally, reaffirming its commitment to customer satisfaction and market leadership.

6.OBJECTIVES

- To maintain and enhance good manufacturing practices across all production units.
- Continuous investment in infrastructure and human resources development to align with growth objectives.
- Forge strategic partnerships with industry-leading institutions to stay abreast of technological advancements.

7.PRODUCTS

Apollo Structural tubes

Strength: Apollo Structural tubes are precision engineered to maximise strength. Using the latest manufacturing technology, Apollo Structural steel tubes have unbelievable strength that outperforms competitors easily.

Quality: APL Apollo's cutting-edge technology allows for Apollo Structural steel tubes to have unmatched quality. The steel that is used for this product range is the best in its class, allowing for a degree of quality never before seen in steel tubes.

Durability: The Apollo Structural steel tube range is incredibly durable. They have high tensile strength, are weather and termite-resistant, and can withstand heavy loads, making them perfect for structural applications.

Apollo Tricoat

Apollo Tricoat is an eminent manufacturer of Tricoat pipes, Designer Pipes, and Door frames. It boasts a triple-layer protective coating, consisting of Zinc Rich Paint, Zinc, and Top coat. Along with three layers Apollo Tricoat also adheres to competitive advantages, and a single-line process elevating the longevity and durability of steel pipes and tubes.

APL Exclusive

- Gymnasium Equipment
- Designer pipe in Gates, Grills and Railings
- Steel Furniture (Table, Chairs and Fancy products)
- Lighting pole and Solar panel projects.
- Heat Exchanger and Transformer.
- Fencing post, Boundary wall
- Rack, Ladder and Swing , Cattle Rails and Handrails , Roofing solutions

8.CONCLUSION

In conclusion, my internship experience at APL Apollo Tubes Limited has been truly enlightening and immensely rewarding. Throughout my tenure, I have had the privilege of gaining invaluable insights into the intricate operations of a prominent leader in the steel industry. Witnessing firsthand the company's unwavering dedication to quality, innovation, and customer satisfaction has been both inspiring and enlightening. APL Apollo Tubes Limited's relentless pursuit of excellence and its pivotal role in driving India's infrastructural growth underscore its significance as a key player in the nation's development landscape. As I reflect on my internship journey, I am grateful for the invaluable experiences, mentorship, and knowledge gained during my time at APL Apollo Tubes Limited. I am confident that the insights and skills acquired will serve as a solid foundation for my future endeavors in the industry. I extend my heartfelt gratitude to the entire team at APL Apollo Tubes Limited for their guidance, support, and encouragement throughout my internship tenure.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

INTERNSHIP DETAILS

ACADEMIC YEAR 2020-2021

Sl No	Name	Industry	Year	Duration
1	MANILA MAHESH	KELTRON	2020-2021	1 WEEK
2	HRIDYASREE VALSAN			
3	ANAGHA.M			
4	AHMED ADIL			
5	AATHISH JAGADEESH			
6	ABHINAV AP			
7	JEEVA NARAYANAN			
8	AMAR RAJENDRAN			
9	AMRUTHA RAJEEVAN			
10	FATHIMATHU SAHALA BEEVI			
11	AVANTHIKA K			
12	RISHIKA PRADEEP			
13	NIPUN S ANAND			
14	VISHNU PRABHAKAR			
15	PARVATHI K			
16	AADARSH K			
17	V K AYESHA			
18	ABHIJITH RAMRAJ PK			
19	JIJO JAISON			
20	KAVYA DEVI MK			
21	RAMRUTHA RAJEEVAN			
22	MUHAMMED JISHAN PTK			
23	MUHAMMED ZAHID AP			
24	MUHAMMED RISHAL			
25	MISHAB CP			
26	U V VAISHNAV			

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27	MUHAMMED	KELTRON	2020-2021	1 WEEK
28	MEGHA PK			
29	THANMAYA SANJEEV			
30	THEJA RAJESH			
31	PALLAVI SWAROOP KUMAR			
32	THANYA MOHAN			
33	ANAGHA K			
34	SAFA FATHIMA			
35	SAFA SAYED			
36	SREENISHA KP			
37	SREEHARI V			
38	SMIJITH M			
39	SREENANDANA TV			
40	SRAVAN R			

HOD

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Name of the Student	**Ms. ANAGHA M**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS009
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011377
Roll No./Register No.	K20H249I110032
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Name of the Student	**Mr. AHMED ADIL**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS003
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011396
Roll No./Register No.	K20H249I110051
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Name of the Student	**Mr. MISHAB C P**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS020
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011408
Roll No./Register No.	K20H2491110063
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Name of the Student	**Mr. AATHISH P JAGADEESH**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS001
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011391
Roll No./Register No.	K20H249I110046
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Name of the Student	**Ms. JEEVA NARAYANAN**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS016
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala
Online Portal Registration No.	KI011389
Roll No./Register No.	K20H249I110044
Program Category	INTERNSHIP
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	COMPLETED SUCCESSFULLY

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Name of the Student	**Mr. AMAR RAJENDRAN**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS005
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011400
Roll No./Register No.	K20H249I110055
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	COMPLETED SUCCESSFULLY

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Name of the Student	**Mr ABHINAV A P**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNG19CS002
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KIO 1397
Roll No./Register No.	K20H249I110052
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	COMPLETED SUCCESSFULLY

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Name of the Student	**Ms. AMRITHA RAJEEVAN M**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS007
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011375
Roll No./Register No.	K20H249I110030
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Name of the Student	**Ms. MANILA MAHESH**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19C5018
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011369
Roll No./Register No.	K20H249I110024
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Name of the Student	**Ms. HRIDYASREE VALSAN**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS014
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011384
Roll No./Register No.	K20H249I110039
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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KSG/H249/INTP/21-01/L0454 04.01.2021

CERTIFICATE

Certified that the Student has completed the **Internship Program** conducted at KELTRON as per the particulars given below:

Name of the Student	**M:s. FATHIMATHU SAHALA BEEVI**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS013
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011382
Roll No./Register No.	K20H249I110037
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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CERTIFICATE

Certified that the Student has completed the **Internship Program** conducted at KELTRON as per the particulars given below:

Name of the Student	**Ms. HRYSHIKA PRADEEP**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS015
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011376
Roll No./Register No.	K20H249I110031
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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KSG/H249/INTP/21-01/L0478 04.01.2021

CERTIFICATE

Certified that the Student has completed the **Internship Program** conducted at KELTRON as per the particulars given below:

Name of the Student	**Mr. NIPUN S ANAND**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS024
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KIC11406
Roll No./Register No.	K20H249I110061
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Temp. Ref: KSG/INTP/Type: 1/2/21.04.2019

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Name of the Student	**Mr. VISHNU PRABHAKARAN**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS041
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011398
Roll No./Register No.	K20H249I110053
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Certified that the Student has completed the **Internship Program** conducted at KELTRON as per the particulars given below:

Name of the Student	**Ms. PARVATHI K**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS026
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001,** Kerala
Online Portal Registration No.	KI011379
Roll No./Register No.	K20H249I110034
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	COMPLETED SUCCESSFULLY

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Certified that the Student has completed the **Internship Program** conducted at KELTRON as per the particulars given below:

Name of the Student	**Mr. ADARSH K**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	GQ/LE/CS/20/04
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011404
Roll No./Register No.	K20H249I110059
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Name of the Student	**Ms. V K AYSHA**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS043
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KIO11386
Roll No./Register No.	K20H249I110041
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Name of the Student	**Mr. ABHIJITH RAMRAJ P K**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	GQ/LE/CS/20/02
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011388
Roll No./Register No.	K20H249I110043
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Name of the Student	**Ms. KAVYA DEVI M K**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS017
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011373
Roll No./Register No.	K20H249I110028
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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KSG/H249/INTP/21-01/L0450 04.01.2021

CERTIFICATE

Certified that the Student has completed the **Internship Program** conducted at KELTRON as per the particulars given below:

Name of the Student	**Ms. RAMRITHA RAJEEVAN**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS027
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011378
Roll No./Register No.	K20H249I110033
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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CERTIFICATE

Certified that the Student has completed the **Internship Program** conducted at KELTRON as per the particulars given below:

Name of the Student	**Mr. MUHAMMED ZAHID A P**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS023
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011405
Roll No./Register No.	K20H249I110060
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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04.01.2021

CERTIFICATE

Certified that the Student has completed the Internship Program conducted at KELTRON as per the particulars given below:

Name of the Student	Mr. MUHAMMAD JISHAN P T K
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS021
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala
Online Portal Registration No.	KI011407
Roll No./Register No.	K20H249I110062
Program Category	INTERNSHIP
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	COMPLETED SUCCESSFULLY

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KSG/H249/INTP/21-01/L0467 04.01.2021

CERTIFICATE

Certified that the Student has completed the **Internship Program** conducted at KELTRON as per the particulars given below:

Name of the Student	**Mr. MUHAMMED RISHAL IKBAL**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS022
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011395
Roll No./Register No.	K20H249I110050
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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CERTIFICATE

Certified that the Student has completed the **Internship Program** conducted at KELTRON as per the particulars given below:

Name of the Student	**Mr. MUHAMMED RISHAL IKBAL**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS022
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011395
Roll No./Register No.	K20H249I110050
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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04.01.2021

CERTIFICATE

Certified that the Student has completed the Internship Program conducted at KELTRON as per the particulars given below:

Name of the Student	**Mr. MISHAB C P**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS020
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249),** **3rd Floor, Corporation Building, Naduvilal Junction,** **Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011408
Roll No./Register No.	K20H249I110063
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Name of the Student	**Ms. MEGHA P K**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS019
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011368
Roll No./Register No.	K20H249I110023
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Name of the Student	**Ms. THANMAYA SANJEEV**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS036
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011371
Roll No./Register No.	K20H249I110026
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Name of the Student	**Ms. THEJA RAJESH**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS038
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011372
Roll No./Register No.	K20H249I110027
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Name of the Student	**Ms. PALLAVI SWAROOP KUMAR**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS025
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011374
Roll No./Register No.	K20H249I110029
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Name of the Student	**Ms. THANYA MOHAN**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS037
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011381
Roll No./Register No.	K20H249I110036
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Name of the Student	**Mr. SREEHARI V**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS033
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	K0011396
Roll No./Register No.	K20H249I110051
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Name of the Student	**Mr. SMIJITH M**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS031
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011402
Roll No./Register No.	K20H249I110057
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Name of the Student	**Ms. SREENISHA K P**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS035
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011383
Roll No./Register No.	K20H249I110038
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Name of the Student	**Mr. SRAVAN R**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS032
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011390
Roll No./Register No.	K20H249I110045
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Name of the Student	**Mr. NIPUN S ANAND**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS024
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011406
Roll No./Register No.	K20H249I110061
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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04.01.2021

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Name of the Student	**Ms. AVANTIKA K**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS011
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011370
Roll No./Register No.	K20H249I110025
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Name of the Student	**Mr. JIJO JAISON**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	GQ/LE/CS/20/05
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011403
Roll No./Register No.	K20H249I110058
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Name of the Student	**Mr. MUHAMMAD JISHAN P T K**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS021
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KIO11407
Roll No./Register No.	K20H2491I10062
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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Name of the Student	**Ms. SREENANDANA T V**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS034
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011392
Roll No./Register No.	K20H249I110047
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

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KSG/H249/INTP/21-01/L0455 04.01.2021

CERTIFICATE

Certified that the Student has completed the **Internship Program** conducted at KELTRON as per the particulars given below:

Name of the Student	**Ms. SREENISHA K P**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No	SNGCSCS035
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011383
Roll No./Register No.	K20H249I110038
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	COMPLETED SUCCESSFULLY

Authorized Signatory
(Knowledge Services)

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

Kerala State Electronics Development Corporation Ltd.
(A Government of Kerala Undertaking)

KELTRON®
CIN : U74999KL1972SGC002450

ITBG - Knowledge Services Group
GSTIN : 32AABCK1319E4Z5

Phone: 0471-2724765 || Helpline No: +91 9188665545 || E-mail: iteg@keltron.org || Website Link : ksg.keltron.in

KSG/H249/INTP/21-01/L0459 04.01.2021

CERTIFICATE

Certified that the Student has completed the **Internship Program** conducted at KELTRON as per the particulars given below:

Name of the Student	**Ms. SAFA FATHIMA**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS028
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011387
Roll No./Register No.	K20H249I110042
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

Authorized Signatory
(Knowledge Services)

KELTRON IT EDUCATION CENTRE

DR. LEENA A. V.
PRINCIPAL

Kerala State Electronics Development Corporation Ltd.
(A Government of Kerala Undertaking)

KELTRON®
CIN : U74999KL1972SGC002450

ITBG - Knowledge Services Group
GSTIN : 32AABCK1319E4Z5

Phone: 0471-2724765 || Helpline No: +91 9188665545 || E-mail: iteg@keltron.org || Website Link : ksg.keltron.in

KSG/H249/INTP/21-01/L0452 04.01.2021

CERTIFICATE

Certified that the Student has completed the **Internship Program** conducted at KELTRON as per the particulars given below:

Name of the Student	**Ms. ANAGHA K**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS008
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249), 3rd Floor, Corporation Building, Naduvilal Junction, Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011380
Roll No./Register No.	K20H249I110035
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	**COMPLETED SUCCESSFULLY**

Authorized Signatory
(Knowledge Services)

KELTRON IT EDUCATION CENTRE K.S.E.D.C. LTD. PALAKKAD

PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR

Kerala State Electronics Development Corporation Ltd.
(A Government of Kerala Undertaking)

ITBG - Knowledge Services Group
GSTIN : 32AABCK1319E4Z5

KELTRON
CIN : U74999KL1972SGC002450

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KSG/H249/INTP/21-01/L0457 04.01.2021

CERTIFICATE

Certified that the Student has completed the **Internship Program** conducted at KELTRON as per the particulars given below:

Name of the Student	**Ms. SAFA SAYEED V**
Name & Address of the College/Institution at which the Student is Studying	Sree Narayana Guru College of Engineering & Technology, Chalakode (P.O), Payyanur, Kannur, Kerala – 670307
University/Board, which the Institution is Affiliated to	A P J Abdul Kalam Technological University (KTU), Kerala
Branch/Discipline of Study	B. Tech in Computer Science & Engineering
Student's Registration No.	SNC19CS029
Semester / Year of Study	3rd Semester
Name & Address of the Institution/Centre where the Internship Program was conducted	**Keltron REC (H249),** **3rd Floor, Corporation Building, Naduvilal Junction,** **Thrissur - 680001, Kerala**
Online Portal Registration No.	KI011385
Roll No./Register No.	KU20H2491110040
Program Category	**INTERNSHIP**
Period & Duration of the Program	16.12.2020 to 22.12.2020 (1 Week)
Area of Exposure	Understanding Real-Time Server Side Scripting using PHP, Programming Language, MySQL Database Connectivity, Session Tracking, Object Handling in Session, Real-Time Web Hosting using C Panel & FTP Tools
Status	COMPLETED SUCCESSFULLY

Authorized Signatory
(Knowledge Services)

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

A STUDY ON KELTRON LIGHTING SCHEME, LIGHTING DIVISION ,NANDI,KOYILANDI

WITH SPECIAL REFERENCE TO

PRODUCTION DEPARTMENT

Submitted to
HOD (CSE DEPARTMENT)

In accordance to Internship

Submitted by

S8 CSE STUDENTS

DEPARTMENT OF COMPUTER SCIENCE

AND ENGINEERING

SREE NARAYANA GURU COLLEGE

OF ENGINEERING & TECHNOLOGY.

PAYANNUR

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

CONTENTS

1. INTRODUCTION
2. HISTORY
3. SERVICES, VISION AND MISION
4. COMPANY PROFILE
5. ORGANISATIONSET UP
6. OBJECTIVE
7. PRODUCTS
8. CONCLUSION

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

1.INTRODUCTION

It is a public sector company under kerala state government . its registered name is KERALA STATE ELECTRONICS DEVELOPMENT COORPERATION LIMITED. It is a multiproduct multicenter organization presents a range of LED lighting systems for various applications. These lighting systems are manufactured by Keltron Lighting Division, a state-of-the-art facility at Mudadi, Kozhikode, that integrates advanced LED sources, driver technologies, optics and design to produce world-class luminaries. The R&D effort has been focused on reducing energy consumption, extending life and maximizing illumination performance.mKeltron Lighting solutions comprises Street Lights (20W-150W), High Mast/Mini Mast/Low Mast (6 Mt- 12Mt Height), All In One Solar Lights (AIO), LED Bulbs, LED Tube Lights, Emergency Lanterns etc.KELTRON presents a range of LED lighting systems for various applications.These lighting systems are manufactured by Keltron Lighting Division, a state-of- the-art facility at Mudadi, Kozhikode, that integrates advanced LED sources, driver technologies, optics and design to produce world-class luminaries. The R&D effort has been focused on reducing energy consumption, extending life and maximizing illumination performance. Keltron Lighting solutions comprises Street Lights (20W-150W), High Mast/Mini Mast/Low Mast (6 Mt- 12Mt Height), All In One Solar Lights (AIO), LED Bulbs, LED Tube Lights, Emergency Lanterns etc.

3.SERVICES, MISSION AND VISION

KELTRON is a multi-product organisation producing a wide range of products from discrete electronics components to complex equipment and systems.Keltron manufactures these products in six Production Centres and two subsidiary companies located in different parts of Kerala.The products are brought to the customers through Offices in Mumbai, Delhi, Kolkata, Chennai, Bangalore, Ahmedabad, Hyderabad and Trivandrum.

Mission: The mission of Keltron is to transform itself to one of the Navratna corporations of the country.

Vision: Adding Value to life and Industry major products are the mines for Indian Navy and various parts of rockets for ISRO. It includes all the basic electronic components Resistors , Capacitors ,diodes etc. Provides services in the range of IT , Web designing and geo informatics, .Manufactured automatic traffic regulation system which were used in metro cities of India

5.ORGANISATION SET UP

This section at Keltron is concerned with the testing of LED aspects and reverse counter. Earlierthis section was involved in the work BSNL like manufacturing line circuit cards LCC. Now thisunit concentrates in traffic equipment units. This section mainly consists of production of LEDaspects. This section produces LCD cards such as LCD STOP, LCD WALK, LCD GREEN, andLCD AMBER. This section mainly consists of the testing of UPS, LED aspects etc.

Testing process indicates the product have to be checked under specified conditions to meet t he givenspecifications. For eg: in the testing of LED aspects, testing is done using a LUX meter to measurethe brightness ie, the brightness can be controlled by varying the current. For amber, the optimumcurrent preferred is 360mA and for green light is 140mA.

PROCESS:

In this process of production components of traffic signal equipment units like red, amber, green,walk, stop etc. are produced. In addition to this it involves production of reverse counter. In this traffic signal equipment unit's time period is already set which counts reversely. The equipm ent'sare arranged in rod noting the level of traffic in that junction. That is this set according to theintensity of crowd. raw materials are collected from private companies or government companies.About 90% of raw materials are from private limited companies. The raw materials include cards

like PCB, transformer, rear cover, IC's, LED, capacitor, transistor etc. These are purchased by purchase department and primarily stored in main store. Later it was transformed into the s ubstore . The various products by Keltron unit Calicut include Energy meter card manufactured and supplied to united electricals LED tubelights for industrial and commercial purpose. LED street lights for panchayats and town area

6.OBJECTIVE

1.Establish good manufacturing practices in all production centres.

2. Upgrading infrastructure and human resources development on a part with goal development indices

3. Establishing links with high profile institution like DRDO , VSSC ,NPOL to keep pace with technology.

8.CONCLUSION

According to my experience I would like to say that this study was very beneficial for me, I foundThat the entire experience very rewarding. I could get a good idea about the history and profile ofKERALA. The organization study has given me an insight into working of an organizationengaged in the production of electronics equipment.A nation's future and its ability to compute in the global market depend greatly on how it generatesnew ideas and innovations in science and technology. Keltron has initiated steps to create aknowledge center that would catalyze the process of knowledge assimilation as well itsdispensation. Keltron is one of the leading capacitors manufacturing companies in Kerala. It is anISO 9001 certified functioning company. It has always been able to provide high quality products.It also has a super Research and Design section that help in providing capacitors according to theneeds of the customers. It has committed set of technocrats who work tirelessly for theaccomplishment of the goals of the company.The company provides employment for the handicapped people giving them high respect. It has aVery eco-friendly surrounding helping its employees to keep a cool atmosphere. Keltron after its bad play has found a stage where it can make profits. As an electronic goods manufacturer, it hasa bright future ahead, a future belonging to innovation and simplicity of electronics

Dr. LEENA A V
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SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

INTERNSHIP DETAILS

ACADEMIC YEAR 2019-2020

Sl.No:	Name	Industry	Year	Duration
1	BHAVYA N	AAMSHE TECHNOLOGY LLP	2019-2020	5 DAYS
2	SANDRA M	HEDONE	2019-2020	5 DAYS

HOD

PRINCIPAL

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

Aamshe Technology LLP
TC 14/765, Observatory Lane
Nandhavanam,Palayam,Thiruvananthapuram - 33

Date: 25/07/19

TOWHOMITMAYCONCERN

This is to certify that **Miss BHAVYA (Reg No-SNC18CS011), D/o MADHUSOODANAN.N,** a student of **Sree Narayana Guru College of Engg and Technology** has successfully completed 5 days (20th JULY to 25th JULY) internship program at this Kannur Branch. The student has shown keen interest and initiative during the training.

We wish you every success in life.

For Aamshe Technology LLP

Sayooj Sathyapalan

Human Resources Department

AAMSHE TECHNOLOGY LLP

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

9249792498
aamshetechnolgy@gmail.com

Aamshe

HEDONE

19-07-2019

CERTIFICATE OF COMPLETION

This is to certify that **Ms. SANDRA M (SNC18CS028)** ,1st year B Tech in Computer Science and Engineering student from **SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY** has undergone 5 days (30Hrs) internship training program in our organization between 15.07.2019 and 19.07.2019 as a part of implant training in their curriculum for B tech programme. She has got practical exposure in **ANDROID**. She has shown keen interest in work and her character and conduct were good during this period. We wish her all success.

For HEDONE

Managing Partner / Partner

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

2nd Floor, Trade Centre, opp: Jawahar Library, Yogasala Road, Kannur - 670 001, Kerala, India Tel. 0497-2974111
E-mail : mail@hedoneservices.com Web : www.hedoneservices.com

AN INTERNSHIP PROGRAM ON SOFTWARE DEVELOPMENT AT AAMSHE TECHNOLOGIES TECHNOLOGIES, KANNUR

Submitted to
HOD (CSE DEPARTMENT)

In accordance to Internship

Submitted by

BHAVYA N

DEPARTMENT OF COMPUTER SCIENCE

AND ENGINEERING

SREE NARAYANA GURU COLLEGE

OF ENGINEERING & TECHNOLOGY,

PAYANNUR

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

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1. INTRODUCTION

2. MISSION

3. AREAS OF EXPERTISE

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

INTRODUCTION

Aamshe Technology is a software company based in the city of Cannanore, India. Aamshe Technology is working towards the goal of effective use of visualization in business software. The company is set up by a group of eight core members. Aamshe Technology was set up in 2015 as an endeavor by the group to continue its work in building and helping to build visual software in wider variety of application areas. Aamshe Technology builds generic visualization frameworks, off the shelf visualization components as well as domain specific end user applications as products. Aamshe Technology also offers architecture, conceptualization consulting and software development services for transforming products and applications to the next generation.

Aamshe Technology Llp is a Limited Liability Partnership firm incorporated on 13 April 2016.It is registered at Registrar of Companies, Ernakulam. Its total obligation of contribution is Rs. 600,000.

Designated Partners of Aamshe Technology Llp are Jithin Prakash Choyyan Kalthil and Vignesh.

Aamshe Technology Llp's last financial year end date for which Statement of Accounts and Solvency were filed is N/A and as per records from Ministry of Corporate Affairs (MCA), date of last financial year end date for which Annual Return were filed is N/A.

Aamshe Technology Llp's LLP Identification Number is (LLPIN)AAG-1667. Its Email address is ceo.aamshe@gmail.com and its registered address is K C HOUSE, RAMATHERU, PALLIKUNNU (P) NA KANNUR Kannur Kerala 670011

MISSION:

At Aamshe Technology LLP, our mission is to empower businesses with cutting-edge technology solutions that drive growth, efficiency, and innovation. We are committed to understanding the unique challenges and objectives of each client and delivering customized solutions that align with their goals. Through continuous innovation and collaboration, we aim to be a trusted partner in our clients' success and contribute positively to their growth and development.

AREAS OF EXPERTISE

Aamshe Technology LLP specializes in a wide range of technology solutions, including:

- Custom Software Development
- Web and Mobile Application Development
- Data Analytics and Business Intelligence
- Cloud Computing and Infrastructure Management
- Cyber security Solutions
- IoT (Internet of Things) Solutions

INTRODUCTION

For over a decade, the world has dramatically changed its course using IT technologies. HEDONE Services understand the necessity and have started givingcontribution in this new generation business era to offerclients, solutions for their every Business and Social Network. Presently catering to clients from India, Canada and Middle Easte

HEDONE is synonymous with a heady mix of enthusiastic, young and experienced engineering professionals and systems development tech wizards, adept at brewing innovative and dynamic e-solutions. There value-added business services and solutions add a spring toportfolio of services to enhance user satisfaction.

Automation isgoal. They factor technology to take the service to a new high.Individually they have experience in variegated fields like designing and developing apt apps (both web and mobile) for start-ups, CRM, Attendance and payroll management, apart from providing seamless e-service platforms suitable across different segments of business and government.

MISSION

At HEDONE, we put client relationships first. We build software solutions that help clients transform their business by unleashing hidden potential with technology.

CORE VALUES

We center our culture around empowering our clients. By applying these four principles to work we are able to contribute to client success and stay ourselves.

COMMITTED SUPPORT

We are passionate about our industry, and we love what we do. We provide regular updates, calls, and product demos for client's assurance.

SERVICES

Mobile solutions

There mobile app developers can build the mobile app to our requirement, in our budget and as per our timeline.Apps they build showcase only a portion of what there mobile app development company is capable of. They know what it takes to convert our vision into reality.Having worked on numerous projects, they understand every app project is different and needs special attention.Thus, they spend a considerable time in planning and research. Designers, prototype engineers always have a way out to our problem and will enlighten we to newer ways to approach our mobile app development solutions.This would help increase customer retention rate, dwell time and app downloads.

Website solutions

The face is the Index of Mind!Website is the Face ofBusiness.The Start-ups, SMEs, and Large enterprises, of all forms and sizes, are looking forward to a real-time successful website design and development company, like HEDONE for their websites designed. Web designers and developers are well thought out professionals. They work closely and incorporate innovative ideas to bring life to our business entities.

Digital Marketing

Audiences today are empowered by connected technologies –and bombarded with marketing messages. It's harder than ever to be heard above the noise. Even conversion-focused brands need to think about building and retaining a loyal audience to protect themselves against commoditization or disruption. To build that kind of brand, you need a story. And to shape that story, you need a strategy. HEDONE leverages there digital experience, analytics expertise, and creative talent to build marketing strategies that deliver exceptional results.In a landscape of disruption,team blends the art and science of strategy, seizing opportunities through actionable insights and powerful storytelling.

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

SREE NARAYANA GURU
COLLEGE OF ENGINEERING & TECHNOLOGY
(PROMOTED BY SREE BHAKTHI SAMVARDHINI YOGAM, KANNUR)
CHALAKKODE P.O., PAYYANUR, KANNUR–670307, KERALA

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

INTERNSHIP DETAILS
2023-2024

1	**Arun K**	**Keltron Component Complex Ltd., Kannur**	**7days 11/09/2023-18/09/2023**
2	**Jishnu Girish**	**Keltron Component Complex Ltd.,** Kannur	**7days 11/09/2023-18/09/2023**
3	**March Mohan**	**Keltron Component Complex Ltd., Kannur**	**7days 11/09/2023-18/09/2023**
4	**Midhun Krishnan**	**Keltron Component Complex Ltd., Kannur**	**7days 11/09/2023-18/09/2023**
5	**Vishnu U**	**Keltron Component Complex Ltd., Kannur**	**7days 11/09/2023-18/09/2023**

HOD ECE

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

ISO 9001 : 2015 Certified Company

KELTRON COMPONENT COMPLEX LTD

(A Govt of Kerala Undertaking) **GSTIN 32AAACK9777B1ZL**

KELTRON

Keltron Nagar
Kalliasseri P.O.
Kannur-670 562
Kerala, India

Telephone : (0497) 2780831 -4 (4 Lines)
Fax : (0497) 2781055
E-mail : info@keltroncomp.org
Website : www.keltroncomp.org

436 23.09.2023

CERTIFICATE

This is to certify that **Mr. Arun K,** (Reg No: SNC21EC001) **B.Tech – Electronics & Communication Engineering** Student of Sree Narayana Guru College of Engineering & Technology, Payyanur – 670 307 has done **'Inplant Training'** at Keltron Component Complex Ltd, Kannur – 670 562 under our guidance from 11th September 2023 to 18th September 2023.

The student has shown keen interest and initiative during the training.

HoD (Personnel & Admin)

KELTRON COMPONENT COMPLEX LTD. KANNUR 670 562

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E-mail : info@keltroncomp.org
Website : www.keltroncomp.org

436 23.09.2023

CERTIFICATE

This is to certify that **Mr. Jishnu Girish,** (Reg No: SNC21EC002) **B.Tech – Electronics & Communication Engineering** Student of Sree Narayana Guru College of Engineering & Technology, Payyanur – 670 307 has done **'Inplant Training'** at Keltron Component Complex Ltd, Kannur – 670 562 under our guidance from 11th September 2023 to 18th September 2023.

The student has shown keen interest and initiative during the training.

HoD (Personnel & Admin)

KELTRON COMPONENT COMPLEX LTD · KANNUR 670 562

Dr. LEENA A. V.
PRINCIPAL

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Fax : (0497) 2781055
E-mail : info@keltroncomp.org
Website : www.keltroncomp.org

436

23.09.2023

CERTIFICATE

This is to certify that **Mr. March Mohan,** (Reg No: SNC21EC003) **B.Tech – Electronics & Communication Engineering** Student of Sree Narayana Guru College of Engineering & Technology, Payyanur – 670 307 has done **'Inplant Training'** at Keltron Component Complex Ltd, Kannur – 670 562 under our guidance from 11th September 2023 to 18th September 2023.

The student has shown keen interest and initiative during the training.

HoD (Personnel & Admin)

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KANNUR

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Fax : (0497) 2781055
E-mail : info@keltroncomp.org
Website : www.keltroncomp.org

436

23.09.2023

CERTIFICATE

This is to certify that **Mr. Midhun Krishnan,** (Reg No: SNC21EC004) **B.Tech – Electronics & Communication Engineering** Student of Sree Narayana Guru College of Engineering & Technology, Payyanur – 670 307 has done **'Inplant Training'** at Keltron Component Complex Ltd, Kannur – 670 562 under our guidance from 11th September 2023 to 18th September 2023.

The student has shown keen interest and initiative during the training.

HoD (Personnel & Admin)

KELTRON COMPONENT COMPLEX LTD. KANNUR 670 562

PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY PAYYANUR
KANNUR

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Website : www.keltroncomp.org

436

23.09.2023

CERTIFICATE

This is to certify that **Mr. Vishnu U,** (Reg No: SNC21EC005) **B.Tech – Electronics & Communication Engineering** Student of Sree Narayana Guru College of Engineering & Technology, Payyanur – 670 307 has done **'Inplant Training'** at Keltron Component Complex Ltd, Kannur – 670 562 under our guidance from 11th September 2023 to 18th September 2023.

The student has shown keen interest and initiative during the training.

HoD (Personnel & Admin)

KELTRON COMPONENT COMPLEX LTD. KANNUR 670 562

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY PAYYANUR

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

Industrial Training

at

KELTRON COMPONENT COMPLEX LTD , KANNUR

Submitted in partial fulfilment for the award of the degree of

Bachelor of Technology

Of

APJ Abdul Kalam Technological University

Submitted by

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ENGINEERING & TECHNOLOGY
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SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

BONAFIDE CERTIFICATE

This is to certify that Industrial Training at **"KELTRON COMPONENT COMPLEX LTD , KANNUR"** *is a bonafide record of the work done by* **Mr. ARUN K , Mr. JISHNU GIRISH, Mr. MARCH MOHAN, Mr. MIDHUN KRISHNAN** and **Mr. VISHNU U** *of fifth semester* ***DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING*** *towards the partial fulfillment for the award of the degree of* **Bachelor of Technology**

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INTRODUCTION

An organization is a social arrangement which pursue collective goals, which controls its own performance, and which has a boundary separating it from its environment. Organization is the association formed by a group of people who worked individually or in groups to achieve common set of goals. Organizational studies are the study of individual and group dynamics in an organizational setting, as well as the nature of the organization themselves. Whenever people interact in an organization, many factors come to play. Organizational studies attempts to understand them and hence it is essential for B.TECH as it helps them to connect theory with practice.
As a part of the B.TECH an organizational study was conducted at "KELTRON LTD" to know about the functions of an entire organization and industrial training. The training and study was conducted for a period of 5 days. The aim of the study is to acquire practical knowledge of the application of management theories in the functioning of the organization and it also helps in understanding the organization structure and functions of various departments in the organization.

KELTRON COMPONENT COMPLEX LTD, KANNUR

Chapter1

INDUSTRY PROFILE

Electronics is one of the fastest expanding fields in research, application development and commercialization. Substantial growth in the field has occurred due to World War II, the invention of the transistor, the Space Program and now the computer industry. The research grants are high, jobs are available and there is much money to be made in areas related to electronics with the beginning of the "Information Superhighway" and Computerized Video coming to your home, it is hard to imagine that electronics will not continue to expand in future. Electronics is everywhere in our lives. India is the fifth largest economy in the World and has the largest GDP among emerging economics. Owing to its large population, the potential consumer demand is almost unlimited and consequently under appropriate condition, strong growth performance can be expected. In fact, the liberalization of the economy in 1991 has led to rapid growth. The electronics industry in particular is emerging as one of the most important industry in the Indian market. The electronic industry in India dates back to the early 1960s.Electronics was initially restricted to the development and maintenance of the fundamental communication system including Radio Broadcasting, Telephonic and Telegraphic Communication and Augmentation of Defense Capabilities. Until 1984, the electronic sector was primarily Government owned.1980s witnessed a rapid growth of the electronic industry due to sweeping economic chances, resulting in the liberalization and Globalization of the country.

Chapter 2

COMPANY PROFILE

Keltron Ltd, Kerala State Electronics Development Corporation Limited, is a public sector Electronics Company located in Kerala, a state in India. It is headquartered at the capital city of Kerala, Thiruvananthapuram. The company is under the direct control of the State government of Kerala. KELTRON's history is a saga of innovation in electronics. From being a pioneer in 1973, to the role of a trend-setter today, Keltron has been the catalysis for the development of electronics industry in Gods own country-Kerala.

Within five years of its inception, Keltron had set up a production centre in every district of the State. More than 5,000 people were engaged directly or indirectly by Keltron for the manufacture of electronic goods. The model of a State-owned electronics corporation was so successful that several other States in India followed suit - launching their own Electronics Corporations. The registered name of the company is Kerala State Electronics Development Corporation Limited (KSEDC Ltd). The name Keltron was coined from two words, Kerala Electronics and when it was necessary to use a small word in Telegrams referring to the company. Later, the same naming convention was adopted to name two other State owned Electronic Companies namely Meltron (Maharashtra Electronics) and Upton (UP Electronics).

The company is located in the northern parts of the state of Kerala about 15 kms from Kannur town at Keltron Nagar, Kalliassseri with over 30 years of experience in the design and manufacture Aluminium Electrolytic Capacitors and a product range extending from Miniature Radial Type to Large Can Screw Terminal type Capacitors. The manufacturing technology is constantly upgraded to meet the emerging trends in the capacitor field for delivering premium quality products.

The manufacturing facility at KCCL integrates the state of the art sophisticated automatic machinery imported from Japan, Italy, and Taiwan. It has the capacity to produce Ultra Miniature, Standard and High Reliability Radial Lead Type Capacitors, Axial Lead Type Capacitors, Snap-in Terminal type capacitors, Screw Terminal type Capacitors and AC Motor Start Capacitors. The R&D center of the company has the recognition of the department of Scientific & Industrial Research, Ministry of Science & Technology, Govt of India. KCCL is also a professional manufacturer of Low Voltage and High Voltage formed Aluminium Foils required for Aluminium Electrolytic Capacitors. This in-house forming plant supplies wide variety of formed foils required for the capacitor division

THE AMALGAMATION

In the year 2008-09 the company has undergone a transformation both structurally and functionally. The Government of Kerala sanctioned on 27-05-2008 the merger of four subsidiaries of Kerala State Electronics Development Co-operation Ltd (KSEDC) at kannur via, Keltron Resistors Ltd (KRL),Keltron Magnetic Ltd (KML),Keltron Crystals Ltd(KCL),and Keltron Component Complex Ltd(KCCL) into one company. The amalgamated company was to function under the name, Keltron Component Complex Ltd (KCCL) after the completion of the procedural formalities of merger, only amalgamated KCCL was in existence, while KML,KRL and KCL was dissolved without the process of winding up. The assets and liabilities were taken over by KCCL as a result of this amalgamation.The amalgamated Keltron Component Complex Ltd is a major indigenous manufacturer of Aluminium Electrolytic Capacitors, MPP capacitors carbon & Metal Film Resistors and Piezoelectric Quartz crystals. KCCL markets its products under the brand name "KELTRON" of its parent company. It has the state of the art manufacturing facility with sophisticated automatic machines from Japan and Europe. The company's quality system has been conferred with the ISO 9001 accreditation by KPMG.

Chapter 3

ORGANISATIONAL HISTORY

Today we live in a world where speed, flexibility, intellectual capital development and networks have become the basis for value creation. In this technology driven environment Keltron finds the assimilation adoption and integration of technology rather than investing it. Keltron has become the catalyst in marketing electronics in almost every aspect of our daily life. Since 1973 Keltron's strength lies in the stable foundation and experience built over the years its strong human capital, this nationwide network and its ability to adapt itself to change with over 30 year long track record as a manufacture or sophisticated electronics devices and system.

A strong infrastructure and manufacturing experience since its inception in 1973 Keltron forte has always been high quality manufacturing. During the past 30 years Keltron has churned out a whole range of electronic in products electro-mechanical and high precision modules and sub assemblies of different industry segment.Keltron entered the electronic components industry by setting the electronic components industry by setting up India's largest Aluminum Electrolyte Capacitor plant in technical collaboration with Sprague Electromagnet Belgium in 1976 at Kannur in Kerala.

Mission

The mission of Keltron is to transform itself to one of the Navaratna Corporations of the country. To achieve this mission the organization has set a clearly defined strategy in motion encompassing its core strengths experienced human resources robust infrastructure for high quality manufacture, committed to quality and continuous research and development.

Vision

- To emerge as a strong and self- reliant business enterprise with customer focus, profit orientation and professional outlook.
- To fit the company as Rs. 5 billion company with a net profit of 10% in sales.
- To build up Keltron as a model in the sunrise technology sector of electronics and IT.
- To function as a backbone of electronic industry in the state.
- To continue to play the role of a model agency of the Government for accelerating the growth of development of this core industry in this State.

PERSONNEL DEPARTMENT

Men, Materials and Machines are regarded as the three important factors of production. Among these factors human resource or men is important because, without human beings the other factors cannot perform well. Therefore, human beings constitute the Organization at all levels, and are regarded as the chief dynamic factor of production.
The management makes an effort to co-ordinate human and material resources in such a manner that organizational objectives are achieved. It is not very difficult to handle material resources, but without the efficient use of Human Resource Management, it can never accomplish the objectives of the business.

The Personnel Management can be defined as the Planning, Organizing, Directing and Controlling of the Procurement, Development, Compensation, integration and maintenance and separation of Human Resources to the end that individual, Organization and social objectives are accomplished.
The Personnel Department aims at ensuring a steady source of Human Resource who can contribute to the successful enterprise. The department deals with the management of human resource. The very existence of an undertaking depends upon the competent, co-operative and dedicated performance of the personnel.

Personnel functions of the company consist of several Managerial and Operative Functions. The Managerial Functions are Planning, Organizing, Directing and Controlling of Human Beings. The Operative functions relate to ensuring right people for the right jobs at the right time. These functions include Procurement, Development, Compensation and Maintenance of employees.

Manpower Planning

For meeting the requirements of employees, management must decide beforehand as to what type of men is to be recruited and in what number they are required. The first problem is solved by Job Analysis and the second problem is tackled through Man Power Planning. Manpower Planning is the systematic and continuing process of analyzing organizations. Workforce requirements under changing conditions and developing personnel policies appropriate to the long term effectiveness of the organization. Therefore, a proper and systematic manpower program requires proper forecasting and planning for future. It should consider developing manpower requirements for the whole organization, to create and evaluate the manpower inventory and to develop required talents among the employees selected for promotions.

Recruitments And Placements

Recruitment is the process of searching for prospective employees andstimulating them to apply for jobs in the organization. Placement is the process of assigning the selected candidate with the most suitable jobs in terms of job requirements.As KCCL is a Government Company, recruitment of candidates is done through employment exchange. For executive posts the company approaches professional and employment exchange, Trivandrum and local employment exchanges.As and when a vacancy arises, Personnel and Administration Department notifies it to employment exchanges.

For executive posts the company approaches professional employment exchanges, Trivandrum local employment exchange. Then the personnel department publishes vacancies in leading newspapers. After receiving the applications from the candidates, the department goes for scrutinizing them. The company calls the selected candidates for interview. For this the company has a Selection Board, represented by concerned departmental head, a nominee of the Government of Kerala and the Personnel Manager. This board conducts interviews and selects suitable candidates. Then the company gives appointment order to the selected candidate along with terms and conditions for appointment. If the person is willing to abide by the terms and conditions he is directed to sign and return one of the copies of the order.

Training

Training is the act of increasing the knowledge and skill of an employee for doing a particular job. The purpose of training is to bring about improvement in the performance of work. It includes the learning of such techniques as are required for the better performance of work.

It includes the learning of such techniques as are required for the better performance of definite task.In KCCL, internal as well as external training is given to employees. Fresh hands will be selected as trainees for a period of one year. For existing employees, it is conducting refresher training by way of lectures, work educational classes, external training etc.

Chapter 4

INDUCTION OR ORIENTATION TRAINING

There are two phases of Induction training program. The first phase is generally conducted by the Personnel Department. It is concerned with giving the new employees friendly welcome, explaining the matters concerned with the Company's background, products, health and welfare plans etc. The Head of the Department under whom he has to work conducts the second phase of induction program. The employees are given information regarding production, work rules, working conditions.On first appointment, employees are initially given on- the-job training. Due to technological developments and improved techniques of management and production the training initially given will become out of date and arises the need to give new training. For this regional Worker's Training Education Center Officers come to KCCL. All the details regarding the training given to employees are recorded in KCCL for future reference. Details such as name of employees, date of birth, qualification, type of training, department in which he is working, joining date, training period etc. are recorded.

Performance Appraisal

Performance appraisal is the systematic evaluation of an individual's performance in the job and his potential for development. Appraisal is the evaluation of work quality. It is the systematic and objective way of judging the relative work or ability of an employee in performing his job. Ordinarily the evaluation is done by immediate supervisors. So it is a technique used to know the work of an employee qualitatively and quantitatively on- the-job in comparison with other employees. It is one of the oldest and usual practices of management.

In KCCL at the end of training period the trainees are observed according to his performance during the training period. The Personnel Department provides performances forms for self appraisal, executive appraisal and annual performance appraisal. Self-appraisal form is for self-assessment of the employees. The other two are filled by the concerned department supervisors. Depending upon the performance of the trainee the personnel department decides whether the probation period is to be extended or not. On the basis of his performance during the probation period, the department then decides about the regular placements of the employee.

TIME KEEPING

Every employee is given a separate card with specific number having four digits. The workers, employees, supervisors or executive have different serial number. A master role is kept by the organization. Electronic punching system in KCCL is used to record the time of entry and exist of each employee. Maximum half an hour late is permitted to every employee. In the record half late coming is not allowed

Chapter 5

IMPLANT TRAINING

5.1 CAPACITORS

PRODUCTION OF ALUMINUM ELECTROLYTIC CAPACITORS

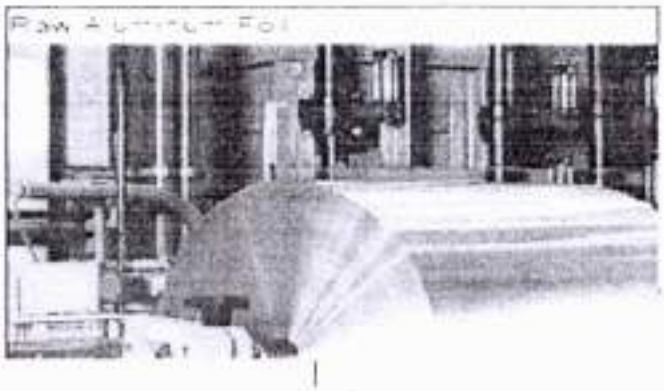

Fig 1: Raw material

(1) Etching

To obtain higher capacitance, surface area of aluminum foil for electrolytic capacitor increases through etching process. In etching process, aluminum foil is applied with DC or AC current in a chloride solution to preferentially dissolve the surface. Surface area is increased by 60-150 times for low voltage foils and 10-30 times for high voltage foils

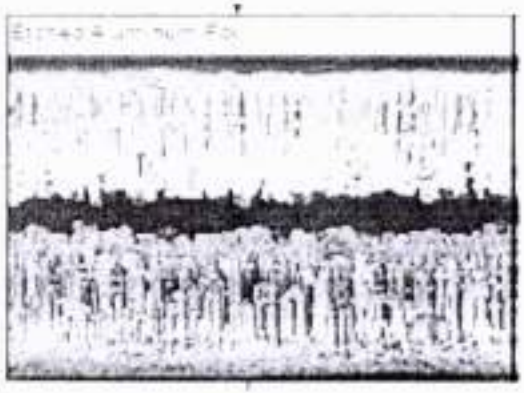

Fig 2: Etched al foil

(2) Anodization(Formation of Dielectric Layer)

Aluminum foil for electrolytic capacitor is further formed with anodic oxide film (Al2O3) on the surface as dielectric layer. Etched aluminum foil is immersed into a solution including ammonium salt of boric acid or phosphoric acid and applied with DC voltage so that the foil becomes positive and the solution becomes negative.Then aluminum oxide film is formed on the surface in proportion to the applied voltage. The anodic oxide film, having the thickness of 13-15 angstrom/V(1.3-1.5 nm/V), is extremely thin, compact and highly insulating.

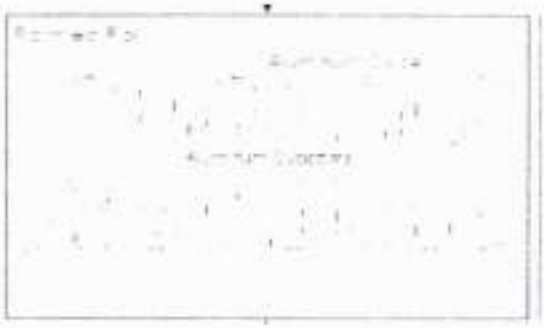

Fig 3: Anodization

(3) Slitting Process

Etching and Forming are processed with wide roll of master foil. Then the master roll is slitted into individual rolls with specified width as per thespecification

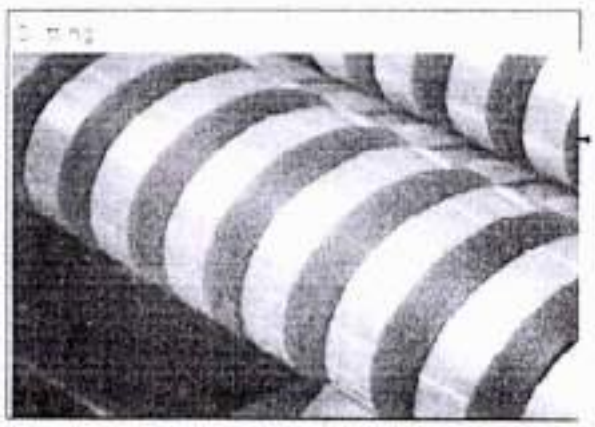

Fig 4: Slitting

(4) Stitching and Winding

Slit anode and cathode foils after slitting process are stitched with lead tabs and wound into cylindrical element together with spacer paper. Spacer paper is to contain liquid electrolyte that works as real cathode and restores damaged dielectric film, as well as maintaining the distance between anode and cathode foils constant to prevent short circuit.

Fig 5: Stitching and winding

(5) Impregnation

Wound element is immersed into electrolyte bath under either low air pressure condition or normal pressure to impregnate.Electrolyte contains one or more polyhydric alcohols such as ethylene glycol as the major solvents and oneor more ammonium salts as solutes to restore the damaged oxide film (dielectric) and significantly improve the performance and life of the capacitor.

Fig 6: Impregnation

(6) Assembling

Rubber seal, rubber-lined terminal plate or molded terminal plate is attached to impregnated element.

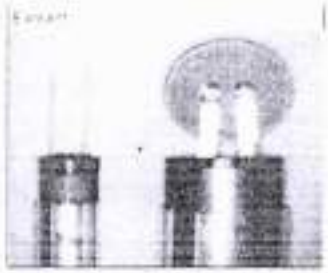

Fig 7: Assembling

(7) Encapsulation

Capacitor element is put into aluminum case and sealed together with rubber seal or terminal plate. Materials to seal up capacitor are EPT or IIR, which is selected depending on the capacitor series.

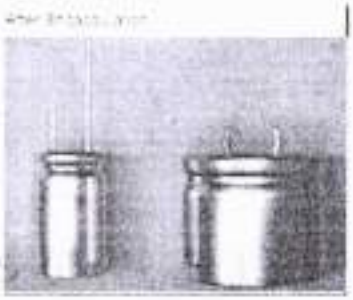

Fig 8: Encapsulation

(8) Sleeve

Sealed capacitor is covered with sleeve made of heat shrinkable PVC or PET. The purpose of sleeve is to indicate information of the capacitor. When electric insulation of inner element or aluminum case is required, proper materials shall be selected

(9) Aging (Reforming)

As described above, the oxide film as the dielectric is formed in Anodization (Forming) Process, but aluminum substrate is exposed during slitting process and stitching process. Oxide film layer is possibly damaged or cracked during winding. Restoringoxide film is necessary for capacitor to fully function.In this process, capacitors are applied with DC voltage in high temperature atmosphere to repair damagedoxide film. Aging makes leakage current of capacitor stable andalso debugs initial failure.

(10) Process Inspection & Packaging

Capacitors finished with aging are packaged throughelectrical screening and appearance inspection.

(11) Outgoing Inspection

Outgoing inspection is conducted based on our ownsampling plan and criteria.

Fig 9: Capacitor complete product

5.2 RESISTORS

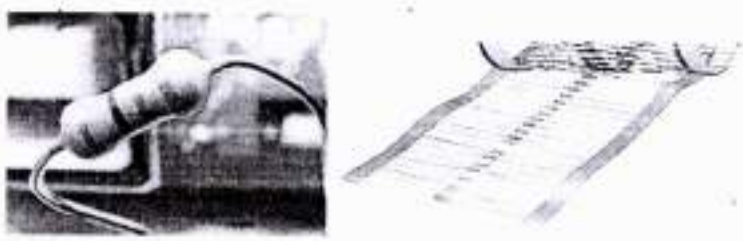

Fig 10: Resisters

The tape is removed during assembly before the leads are formed and the part is inserted into the board. In automated assembly the leads are cut and formed.A resistor is a passive two-terminal electrical component thatimplementselectrical resistance as a circuit element. Resistors act to reduce current flow, and, at the same time, act to lower voltage levels within circuits. In electronic circuits resistors are used to limit current flow, to adjust signal levels, biasactive elements, terminate transmission lines among other uses. High-power resistors that can dissipate many watts of electrical power as heat may be used as part of motor controls, in power distribution systems, or as test loads forgenerators. Resistors can have fixed resistances that only change slightly with temperature, time or operating voltage. Variable resistors can be used to adjust circuit elements (such as a volume control or a lamp dimmer), or as sensing devices for heat, light, humidity, force, or chemical activity.

Resistors are common elements of electrical networks and electronic circuitsand are ubiquitous in electronic equipment. Practical resistors as discrete components can be composed of various compounds and forms. Resistors are also implemented within integrated circuits.The electrical function of a resistor is specified by its resistance: common commercial resistors are manufactured over a range of more than nine orders of magnitude. The nominal value of the resistance will fall within a manufacturing tolerance.

OPERATION

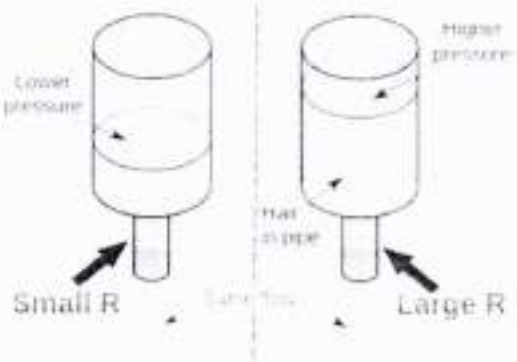

Fig 11: Resister operation

The hydraulic analogy compares electric current flowing through circuits to water flowing through pipes. When a pipe (left) is filled with hair (right), it takes a larger pressure to achieve the same flow of water. Pushing electric current through a large resistance is like pushing water through a pipe clogged with hair. It requires a larger push (voltage drop) to drive the same flow (electric current).

FIXED RESISTORS

A single in line (SIL) resistor package with 8 individual, 47 ohm resistors. One end of each resistor is connected to a separate pin and the other ends are all connected together to the remaining (common) pin – pin 1, at the end identified by the white dot.

Lead arrangements

Resistors with wire leads for through-hole mountingThrough-hole components typically have leads leaving the body axially. Others have leads coming off their body radially instead of parallel to the resistor axis. Other components may be SMT (surface mount technology) while high power resistors may have one of their leads designed into the heat sink.

Carbon composition

Fig 12: Carbon composition Resisters

Three carbon composition resistors in a 1960s valve (vacuum tube) radioCarbon composition resistors consist of a solid cylindrical resistive element with embedded wire leads or metal end caps to which the lead wires are attached. The body of the resistor is protected with paint or plastic.

Early 20th-century carbon composition resistors had uninsulated bodies; the lead wires were wrapped around the ends of the resistance element rod and soldered. The completed resistor was painted for color-coding of its value.The resistive element is made from a mixture of finely ground (powdered) carbon and an insulating material (usually ceramic). A resin holds the mixture together. The resistance is determined by the ratio of the fill material (the powdered ceramic) to the carbon. Higher concentrations of carbon— a good conductor— result in lower resistance. Carbon composition resistors were commonly used in the 1960s and earlier, but are not so popular for general use now as other types have better specifications, such as tolerance, voltage dependence, and stress (carbon composition resistors will change value when stressed with over-voltages). Moreover, if internal moisture content (from exposure for some length of time to a humid environment) is significant, soldering heat will create a non-reversible change in resistance value. Carbon composition resistors have poor stability with time and were consequently factory sorted to, at best, only 5% tolerance. These resistors, however, if never subjected to overvoltage nor overheating were remarkably reliable considering the component's size.

Carbon composition resistors are still available, but comparatively quite costly. Values ranged from fractions of an ohm to 22 mega ohms. Due to their high price, these resistors are no longer used in most applications. However, they are used in power supplies and welding controls.

Carbon pile

A carbon pile resistor is made of a stack of carbon disks compressed between two metal contact plates. Adjusting the clamping pressure changes the resistance between the plates. These resistors are used when an adjustable load is required, for example in testing automotive batteries or radio transmitters. A carbon pile resistor can also be used as a speed control for small motors in household appliances (sewing machines, hand-held mixers) with ratings up to a few hundred watts.

Carbon film

Fig 13: Carbon film resisters

Carbon film resistor with exposed carbon spiral (Tesla TR-212 1 kΩ)A carbon film is deposited on an insulating substrate, and a helix is cut in it to create a long, narrow resistive path. Varying shapes, coupled with the resistivity ofamorphous carbon (ranging from 500 to 800 μΩ m), can provide a wide range of resistance values. Compared to carbon composition they feature low noise, because of the precise distribution of the pure graphite without binding. Carbon film resistors feature a power rating range of 0.125 W to 5 W at 70 °C. Resistances available range from 1 ohm to 10 mega ohm. The carbon film resistor has anoperating temperature range of −55 °C to 155 °C. It has 200 to 600 volts maximum working voltage range. Special carbon film resistors are used in applications requiring high pulse stability.

PRODUCTION OF RESISTORS

RESISTANCE STANDARDS

The primary standard for resistance, the "mercury ohm" was initially defined in 1884 in as a column of mercury 106.3 cm long and 1 square millimeter in cross-section, at 0 degrees Celsius. Difficulties in precisely measuring the physical constants to replicate this standard result in variations of as much as 30 ppm. From 1900 the mercury ohm was replaced with a precision machined plate of manganin.Since 1990 the international resistance standard has been based on thequantized Hall effect discovered by Klaus von Klitzing, for which he won the Nobel Prize in Physics in 1985.Resistors of extremely high precision are manufactured for calibration and laboratory use. They may have four terminals, using one pair to carry an operating current and the other pair to measure the voltage drop.

It is important in small value resistors (100–0.0001 ohm) where lead resistance is significant or even comparable with respect to resistance standard value.

RESISTOR MARKING

Most axial resistors use a pattern of colored stripes to indicate resistance, which also indicate tolerance, and may also be extended to show temperature coefficient and reliability class. Cases are usually tan, brown, blue, or green, though other colors are occasionally found such as dark red or dark gray. The power rating is not usually marked and is deduced from the size.The color bands of the carbon resistors can be four, five or, six bands. The first two bands represent first two digits to measure their value in ohms. The third band of a four-banded resistor represents multiplier and the fourth band as tolerance. For five and six color-banded resistors, the third band is a third digit, fourth band multiplier and fifth is tolerance. The sixth band represents temperature coefficient in a six-banded resistor.Surface-mount resistors are marked numerically, if they are big enough to permit marking; more-recent small sizes are impractical to mark.. A second color of paint was applied to one end of the element, and a color dot (or band) in the middle provided the third digit. The rule was "body, tip, dot", providing two significant digits for value and the decimal multiplier, in that sequence. Default tolerance was ±20%. Closer-tolerance resistors had silver (±10%) or gold-colored (±5%) paint on the other end.

Preferred values

A series might have 100, 125, 150, 200, 300, etc. Resistors as manufactured are subject to a certain percentage tolerance, and it makes sense to manufacture values that correlate with the tolerance, so that the actual value of a resistor overlaps slightly with its neighbors. Wider spacing leaves gaps; narrower spacing increases manufacturing and inventory costs to provide resistors that are more or less interchangeable.Resistors are manufactured in values from a few milliohms to about a gigaohm in IEC60063 ranges appropriate for their tolerance.

Manufacturers may sort resistors into tolerance-classes based on measurement. Accordingly a selection of 100 ohms resistors with a tolerance ±10% might not lie just around 100 ohm (but no more than 10% off) as one would expect (a bell-curve). But rather be in two groups – either between 5 to 10% too high or 5 to 10% too low (but not closer to 100 ohm than that) because any resistors the factory had measured as being less than 5% off would have been marked and sold as resistors with only ±5% tolerance or better. When designing a circuit, this may become a consideration.

FAILURE MODES

The failure rate of resistors in a properly designed circuit is low compared to other electronic components such as semiconductors and electrolytic capacitors. Damage to resistors most often occurs due to overheating when the average power delivered to it (as computed above) greatly exceeds its ability to dissipate heat (specified by the resistor's *power rating*). This may be due to a fault external to the circuit, but is frequently caused by the failure of another component (such as a transistor that shorts out) in the circuit connected to the resistor. Operating a resistor too close to its power rating can limit the resistor's lifespan or cause a change in its resistance over time which may or may not be noticeable. A safe design generally uses overrated resistors in power applications to avoid this danger. Low-power thin-film resistors can be damaged by long-term high-voltage stress, even below maximum specified voltage and below maximum power rating. This is often the case for the startup resistors feeding the SMPS integrated circuit.When overheated, carbon-film resistors may decrease or increase in resistance.Carbon film and composition resistors can fail (open circuit) if running close to their maximum dissipation. This is also possible but less likely with metal film and wirewound resistors. An alternative failure mode can be encountered where large value resistors are used (100's of kilohms and higher). Resistors are not only specified with a maximum power dissipation, but also for a maximum voltage drop. Exceeding this voltage will cause the resistor to degrade slowly reducing in resistance. The voltage dropped across large value resistors can be exceeded before the power dissipation reaches its limiting value.

Chapter 6

CONCLUSION

With the knowledge ofnew techniques in 'Electronics' we are able to make our life more comfortable. One such is "**IN PLANT TRANINING**" at **KELTRON COMPONENT COMPLEX LTD, KANNUR**.. It is a great thing that the company is trying to reach its break-even during this year. By real effort they reduced its current year loss.

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

SREE NARAYANA GURU
COLLEGE OF ENGINEERING & TECHNOLOGY
(PROMOTED BY SREE BHAKTHI SAMVARDHINI YOGAM, KANNUR)
CHALAKKODE P.O., PAYYANUR, KANNUR–670307, KERALA

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

INTERNSHIP DETAILS
2022-2023

Sl.No	Name	Industry	Duration
1	Abdul Kader Anees K V	BSNL, RTTC, Tvm	5days 22/05/2023-26/05/2023
2	Akarsh Krishna	BSNL, RTTC, Tvm	5days 22/05/2023-26/05/2023
3	Akash T	All India Radio FM, Kannur	5days 29/05/2023-02/06/2023
4	Aman V	All India Radio FM, Kannur	5days 29/05/2023-02/06/2023
5	Dhyan Sumesh	All India Radio FM, Kannur	5days 29/05/2023-02/06/2023
6	Fathimath Rasha P	BSNL, RTTC, Tvm	5days 22/05/2023-26/05/2023
7	Malavika P	All India Radio FM, Kannur	5days 29/05/2023-02/06/2023

HOD ECE

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8	Mohammed Aseel	BSNL, RTTC, Tvm	5days 22/05/2023- 26/05/2023
9	Mohammed Fahad M P	All India Radio FM, Kannur	5days 29/05/2023- 02/06/2023
10	Mohammed Nafeel C K	All India Radio FM, Kannur	5days 29/05/2023- 02/06/2023
11	Mohammed Shibil T	All India Radio FM, Kannur	5days 29/05/2023- 02/06/2023
12	Nasha Nourin	BSNL, RTTC, Tvm	5days 22/05/2023- 26/05/2023
13	Neha K P	All India Radio FM, Kannur	5days 29/05/2023- 02/06/2023
14	Parthiv Sreeshan P K	All India Radio FM, Kannur	5days 29/05/2023- 02/06/2023
15	Sabin M	All India Radio FM, Kannur	5days 29/05/2023- 02/06/2023
16	Shagneya K	All India Radio FM, Kannur	5days 29/05/2023- 02/06/2023
17	Shehzad Abdul Rahman	All India Radio FM, Kannur	5days 29/05/2023- 02/06/2023

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18	Sreya M	All India Radio FM,Kannur	5days 29/05/2023- 02/06/2023
19	Thejasree T K	MVIT (ISRO)	16/05/2023- 07/06/2023
20	Haneena Sulthana	Techmaghi	12/10/2022- 16/10/2022
21	Meghana Gangadharan	Techmaghi	12/10/2022- 16/10/2022
22	Fathima Nasla M V	Techmaghi	12/10/2022- 16/10/2022
23	Keerthana C V	Alisons Academy	02/05/2023- 06/05/2023
24	Arjun Ashok	Alisons Academy	02/05/2023- 06/05/2023
25	Jithin Sasidharan N V	Alisons Academy	02/05/2023- 06/05/2023
26	Mariyambi	Alisons Academy	02/05/2023- 06/05/2023
27	Sanishma Sachithanand	Alisons Academy	02/05/2023- 06/05/2023
28	Deepna C	Torc Infotech Kochi	14/10/2022- 20/10/2022

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सत्यमेव जयते

प्रसार भारती
PRASAR BHARATHI
(भारत का लोक सेवा प्रसारक)
(INDIA'S PUBLIC SERVICE BROADCASTER)
आकाशवाणी : कण्णूर
ALL INDIA RADIO : KANNUR

से /No. KNR-11(10)/Trng./2023-E/ दिनांक / Date 02/06/2023

CERTIFICATE

This is to certify that Mr. Akash. T. of Sree Narayana Guru College of Engineering & Technology, Payyanur – 670 307 has undergone Internship Training at this Station from **29.05.2023 to 02.06.2023** (5 working days). Further details are given below:

Sl. No.	Name of the Student	Admn. No.	Semester	Department
1.	Mr. Akash. T.	SNC22EC003	2nd	Electronics & Communication Engineering

During the above period it was observed that he was very keen, diligent and enthusiastic in learning new things.

We wish him a bright future.

02/06/23

(एम. चन्द्रबाबु / M. Chandrababu),
सहायक अभियंता / Assistant Engineer (E),
स्थानीय प्रशासनिक प्रमुख / Local Administrative Head.

PALLIKKUNNU PO KERALA - 670 004. Email DDE(): se airkannur@rediffmail.com email DD (P): sdair.knr@gmail.com
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SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

Industrial Training

At

All India Radio AIR Kannur 101.5 FM

All India Radio AIR Kannur

Kannur-670 004

Submitted in partial fulfilment for the award of the degree of

Bachelor of Technology

Of

APJ Abdul Kalam Technological University

Submitted by

AKASH T

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

2023

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

SREE NARAYANA GURU COLLEGE OF ENGINEERING &

TECHNOLOGY ,PAYYANNUR – 670307

(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

BONAFIDE CERTIFICATE

This is to certify that Industrial Training at "**All India Radio AIR Kannur 101.5 FM**" *is a bonafide record of the work done by* **Mr. AKASH T** *of second semester* ***DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING*** *towards the partial fulfillment for the award of the degree of* **Bachelor of Technology** *by APJ Abdul Kalam Technological University*

Faculty Advisor

Department of ECE

Head of the Department

Department of ECE

Dr. LEENA A V
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प्रसार भारती
PRASAR BHARATHI
(INDIA'S PUBLIC SERVICE BROADCASTER)
आकाशवाणी : कण्णूर
ALL INDIA RADIO : KANNUR

ई /No. KNR-11(10)/Trng./2023-E/ दिनांक / Date 02/06/2023

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Sl. No.	Name of the Student	Admn. No.	Semester	Department
1.	Mr. Akash. T.	SNC22EC003	2nd	Electronics & Communication Engineering

During the above period it was observed that he was very keen, diligent and enthusiastic in learning new things.

We wish him a bright future.

(एम. चन्द्रबाबु / M. Chandrababu).
सहायक अभियंता / Assistant Engineer (E),
स्थानीय प्रशासनिक प्रमुख / Local Administrative Head.

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CHAPTER 1
INTRODUCTION

The Industrial Training Program at All India Radio (AIR) Kannur 101.5 FM stands as a beacon of opportunity for individuals aspiring to carve a niche in the dynamic realm of radio broadcasting. Situated in the culturally rich city of Kannur, Kerala, AIR Kannur is renowned for its commitment to delivering informative, entertaining, and culturally enriching content to listeners across the region.

The training program offered by AIR Kannur 101.5 FM serves as a pivotal platform for budding broadcasting professionals to gain invaluable insights, hands-on experience, and practical skills in radio production, programming, and management. With its rich legacy and sterling reputation in the broadcasting landscape, AIR Kannur provides an ideal environment for individuals eager to explore the nuances of radio broadcasting.

Participants of the training program are immersed in a stimulating learning environment, where they are exposed to the multifaceted aspects of radio production, including scriptwriting, voice modulation, sound engineering, program scheduling, and radio journalism. The curriculum is meticulously crafted to blend theoretical knowledge with practical application, ensuring that participants develop a comprehensive understanding of the intricacies of radio broadcasting.

One of the distinguishing features of the training program at AIR Kannur is its emphasis on innovation and technological advancement. As the broadcasting industry continues to evolve in the digital age, participants are equipped with the latest tools, techniques, and trends in radio broadcasting, preparing them to thrive in an ever-changing media landscape.

Moreover, participants have the privilege of working closely with seasoned professionals and industry experts, benefiting from their mentorship, guidance, and practical insights. Through hands-on training, collaborative projects, and real-world experiences, participants not only hone their technical skills but also cultivate essential soft skills such as communication, teamwork, and problem-solving.

CHAPTER 2

COMPANY PROFILE

Company Name	: Akashvani Kannur
Type	: Regional radio station
Frequency	: 101.5 FM
Headquarters	: Kannur, Kerala,
India Industry	: Media/Broadcasting
Key people	: Not available (typically managed by regional directors and staff appointed by All India Radio)
Services	: Broadcasting news, entertainment, cultural programs, educational content in the Malayalam language
Revenue	: Not available (typically funded by the government as part of All India Radio)
Operating Income	: Not available
Employees	: Not available
Website	: Not available (typically operates under the All India Radio website or regional AIR websites)

CHAPTER 3

ORGANISATION HISTORY

Akashvani Kannur, part of the All India Radio (AIR) network, is a regional radio station located in Kannur, Kerala, India. Established to cater to the cultural, linguistic, and informational needs of the people in the Kannur district, Akashvani Kannur broadcasts a wide range of programs in the Malayalam language, reflecting the local heritage, traditions, and interests of the community. From news bulletins to music, drama, educational content, and cultural shows, Akashvani Kannur serves as a vital medium for entertainment, education, and communication. With a commitment to public service broadcasting, Akashvani Kannur plays a significant role in connecting with listeners, promoting regional language and culture, and fostering a sense of community cohesion.

Early Years:

All India Radio, initially known as the Indian State Broadcasting Service, began its operations in 1930. It was established under the Indian Broadcasting Company, a private company. In 1936, it was taken over by the Government of India and became All India Radio. The primary objective was to inform, educate, and entertain the masses.

Growth and Expansion:

Over the years, AIR expanded its reach across the country, establishing regional stations to cater to diverse linguistic and cultural needs. Akashvani Kannur, specifically, would have been established to serve the people of Kannur district in Kerala, broadcasting in the Malayalam language.

Evolution:

AIR underwent various technological advancements, transitioning from medium-wave to FM broadcasting. It embraced digitalization, offering online streaming services to reach a broader audience. The programming evolved to include a mix of news, music, cultural shows, educational programs, and entertainment tailored to local preferences.

Cultural Impact:

AIR, including Akashvani Kannur, played a crucial role in preserving and promoting regional languages, literature, and traditions. It served as a platform for artists, musicians, poets, and performers to showcase their talents. The radio became an integral part of people's daily lives, providing information, entertainment, and companionship.

Modern Era:

With the advent of television and the internet, AIR adapted its strategies to remain relevant in the digital age. It continues to uphold its public service mandate, serving as a reliable source of news and entertainment for millions of listeners across India. Overall, Akashvani Kannur has contributed to the rich legacy of All India Radio, playing a vital role in connecting with the local community, preserving cultural heritage, and fostering national unity through the medium of radio broadcasting.

CHAPTER 4

ORIENTATION TRAINING

Orientation training for an industrial setting like All India Radio (AIR) Kannur 101.5 FM would typically include various elements to familiarize new trainees with the organization, its operations, policies, and procedures. Here's what could be included in an orientation training program:

Introduction to All India Radio (AIR) Kannur 101.5 FM:
Overview of the history, mission, and objectives of AIR Kannur. Introduction to the organizational structure, departments, and key personnel.

Facility Tour:
Guided tour of the radio station facilities, including studios, control rooms, production rooms, and other relevant areas.Explanation of the functions and equipment used in each area.

Introduction to Broadcasting:
Overview of the broadcasting industry, including its history, evolution, and significance.
Explanation of different broadcasting formats, such as AM, FM, and digital broadcasting.
Radio Broadcasting Basics:
Introduction to basic radio broadcasting concepts, terminology, and techniques. Overview of the roles and responsibilities of various personnel involved in radio broadcasting.

Policies and Procedures:
Explanation of organizational policies, rules, and regulations. Discussion of workplace conduct, ethics, and professionalism. Introduction to safety procedures and emergency protocols.

Technology and Equipment:
Overview of the technology and equipment used in radio broadcasting, including audio consoles, microphones, editing software, and broadcasting software. Hands-on training on using broadcasting equipment and software.

Programming and Content Creation:
Introduction to program scheduling, content creation, and production processes. Overview of different program formats, genres, and styles. Training on scriptwriting, voice modulation, and sound editing techniques.

CHAPTER 5

INPLANT TRAINING

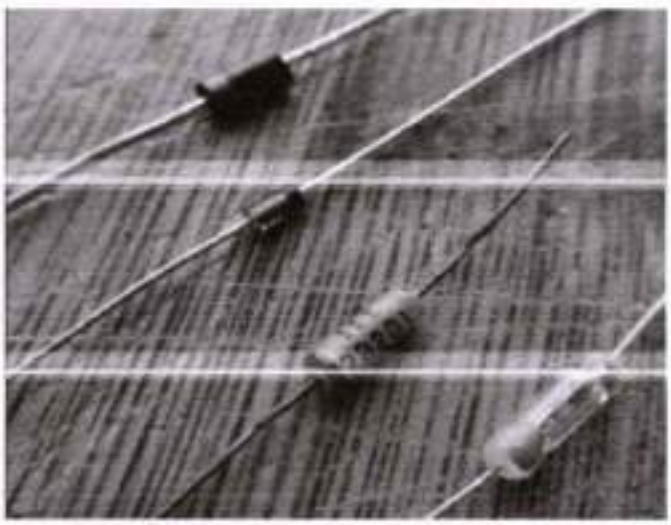
During our in-plant training at AIR Kannur 101.5 FM, I had the opportunity to gain practical insights into the radio broadcasting industry. One of the highlights of my training was the exposure to the studio setup and the broadcasting process.

- **Control Room:** This is the nerve center of the studio, where the broadcast operations are managed. It houses the audio consoles, computers, monitors, and other equipment necessary for controlling the broadcast.
- **Recording Booths:** These enclosed spaces are designed for recording voiceovers, interviews, and musical performances. They are equipped with high-quality microphones, headphones, and soundproofing materials to ensure optimal recording conditions.
- **Production Area:** This area is dedicated to audio production tasks such as editing, mixing, and mastering. It is equipped with computers loaded with audio editing software, allowing producers to create and polish audio content before it goes on air.
- **On-Air Studio**: This is where the magic happens – where the radio hosts deliver live broadcasts and interact with listeners. The on-air studio is equipped with microphones, headphones, and broadcast consoles, allowing hosts to control the flow of the show seamlessly.
- **Green Room**: A space where guests can relax before going on air. It provides a comfortable environment for guests to prepare themselves mentally and physically for their appearances on radio programs.

The sessions covered topics ranging from the basic principles of electronics to the intricacies of signal propagation. Below, I will outline the key concepts discussed in these sessions:

5.1 DIODES

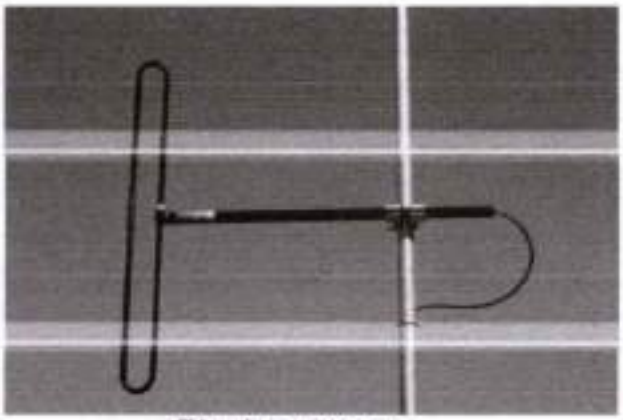
Diodes, being fundamental components of electronic circuits, play a crucial role in signal processing and rectification. Participants were introduced to the basic structure and operation of diodes, including forward and reverse biasing, as well as the characteristics of ideal and non-ideal diodes. Practical demonstrations and hands-on exercises were conducted to illustrate the functionality of diodes in rectifying alternating current (AC) signals into direct current (DC) signals, which is essential for powering electronic devices and equipment in broadcasting setups.



5.2 ANTENNAS

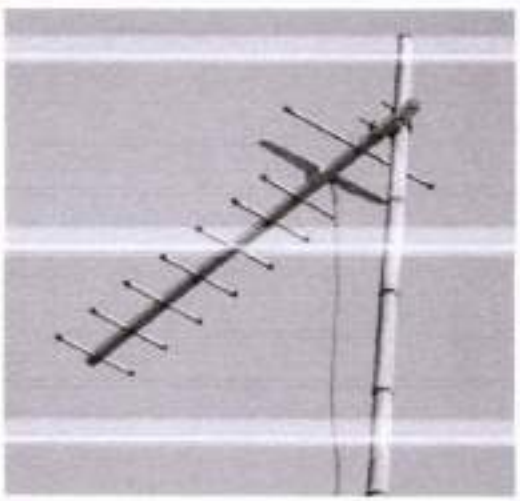
Another significant aspect of the training session was dedicated to the study of antennas and their role in transmitting and receiving radio signals. Participants learned about different types of antennas, including dipole antennas, loop antennas, and directional antennas, and their respective advantages and limitations. The principles of antenna design, radiation patterns, and antenna tuning were discussed in detail,

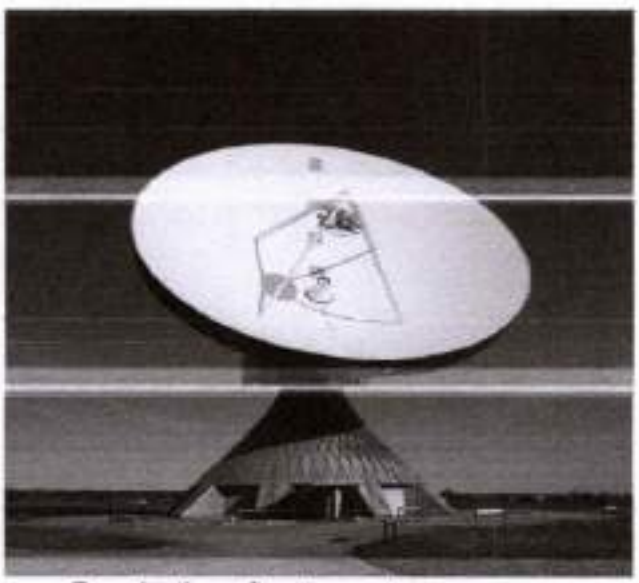
emphasizing the importance of optimizing antenna performance for efficient signal transmission and reception.



Dipole antenna

Yagi-uda antenna

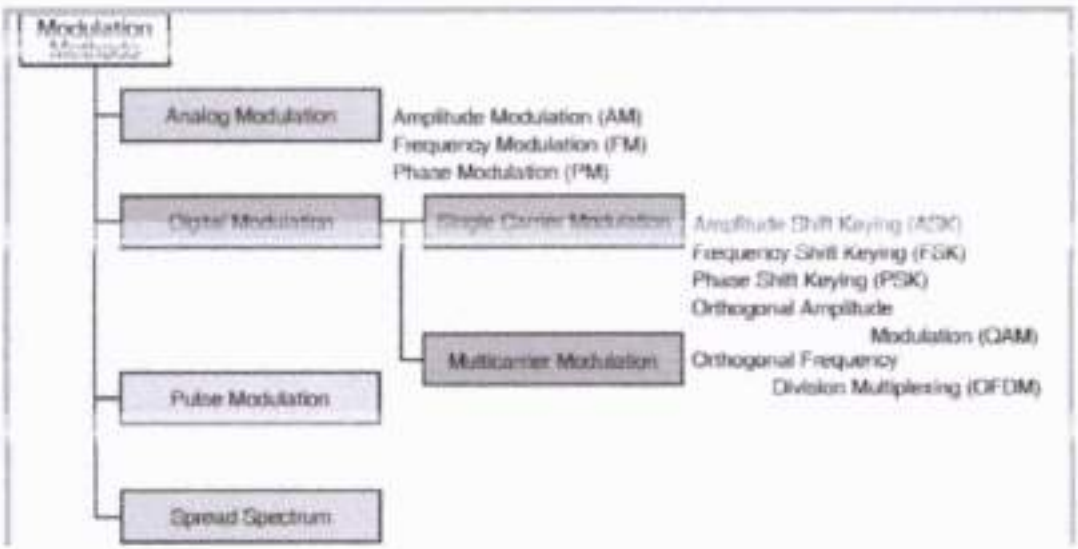




Parabolic reflector antennas

5.3 MODULATION TECHNIQUES:

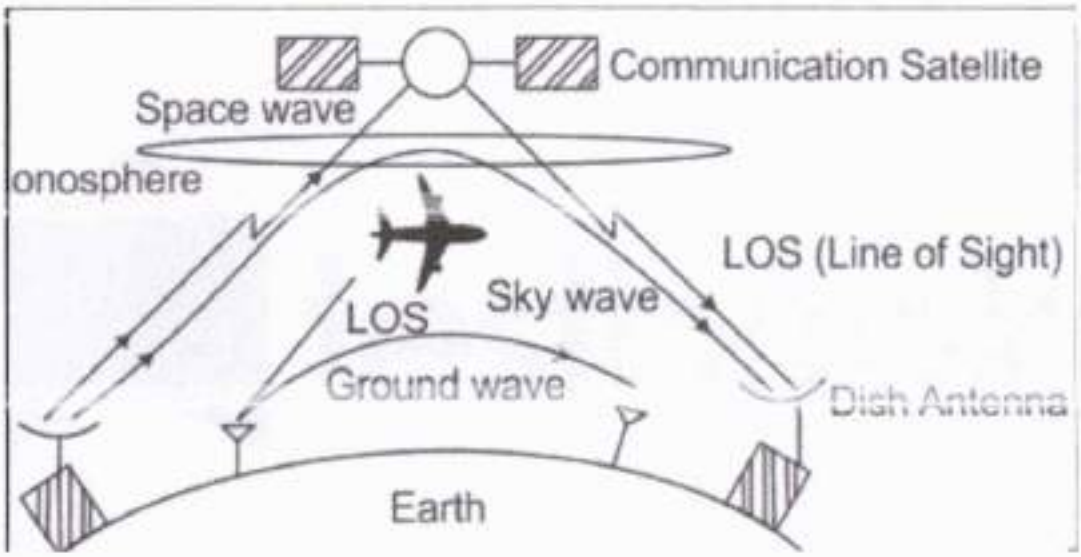
The training curriculum delved into the fascinating realm of modulation techniques, which are essential for encoding information onto carrier signals in radio broadcasting. Various modulation schemes, such as Amplitude Modulation (AM), Frequency Modulation (FM), and Phase Modulation (PM), were explored, along with their respective advantages and applications. Participants gained a comprehensive understanding of the modulation process, including the modulation index, bandwidth requirements, and demodulation techniques. Practical demonstrations and simulations were employed to illustrate the effects of modulation on signal characteristics and fidelity.



5.4 PROPAGATION:

The training session addressed the phenomenon of signal propagation, which governs the transmission and reception of radio waves in different environments. Participants learned about the factors influencing signal propagation, including atmospheric conditions, terrain, and frequency spectrum. The concepts of ground wave, sky wave, and line-of-sight propagation were elucidated, highlighting their significance in long-distance communication and coverage area planning. Case studies and

real-world examples were presented to illustrate the practical implications of signal propagation in radio broadcasting operations.



5.5 UNDERSTANDING NETWORKING TECHNOLOGIES

The training sessions covered a wide range of networking concepts, including:

- **Local Area Network (LAN):**

A Local Area Network is a network that covers a small geographic area, typically within a single building or campus. LANs are commonly used in homes, offices, and schools to connect computers and devices. They provide high-speed data transfer and are typically wired (Ethernet) or wireless (Wi-Fi).

- **Wide Area Network (WAN):**

Wide Area Networks encompass larger geographic areas, often spanning cities, countries, or even continents. WANs connect LANs over long distances and use various technologies such as leased lines, satellite links, or the internet. The internet itself is a global WAN.

- **Metropolitan Area Network (MAN):**

A Metropolitan Area Network covers a city or a large campus. It provides high-speed connectivity for businesses and institutions within a specific urban area. MANs are often used for connecting multiple LANs.

Virtual Private Network (VPN):

VPNs create secure and encrypted connections over public networks like the internet. They allow remote users to access a private network securely, making them vital for remote work and ensuring data confidentiality.

- **Intranet:**

An Intranet is a private network that uses internet technologies but is accessible only to authorized users within an organization. It facilitates internal communication, document sharing, and collaboration.

- **Extranet:**

An Extranet is an extension of an Intranet that allows limited access to external parties, such as suppliers, partners, or customers. It enables secure sharing of specific information with authorized external users.

- **Wireless Networks:**

Wireless networks, including Wi-Fi and cellular networks, provide wireless connectivity for devices. They are essential for mobile communication and internet access.

- **Peer-to-Peer (P2P) Network:**

P2P networks allow devices to communicate and share resources directly with each other without the need for a central server. This type of network is often used for file sharing.

- **Client-Server Network:**

In a client-server network, client devices (such as computers) request services or resources from a central server. This model is common in business environments and web services.

- **Cloud Computing:**

Cloud computing relies on network infrastructure to provide on-demand access to computing resources and services over the internet. This includes Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS).

CHAPTER 6

CONCLUTION

In conclusion, my internship experience at Akashvani Kannur has been immensely valuable and rewarding. Throughout my time there, I had the opportunity to gain practical insights into various aspects of radio broadcasting, including production, programming, and management.

One of the key takeaways from this experience is the importance of effective communication and teamwork in a media environment. I learned how to collaborate with colleagues to produce high-quality content and ensure smooth operations.

Additionally, I developed a deeper understanding of the role that radio plays in informing, entertaining, and connecting communities. It was inspiring to witness first-hand the impact that our broadcasts had on listeners, whether it was providing vital information during emergencies or offering a platform for local voices to be heard.

Overall, my internship at Akashvani Kannur has not only enhanced my skills and knowledge in radio broadcasting but has also instilled in me a greater appreciation for the power of media in shaping society. I am grateful for the opportunity to have been a part of such a dynamic and meaningful organization.

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QP13FMT01/067430

भारत संचार निगम लिमिटेड

(भारत सरकार का उद्यम)

Bharat Sanchar Nigam Limited

(A Govt. of India Enterprise)

क्षेत्रीय दूरसंचार प्रशिक्षण केन्द्र

तिरुवनंतपुरम - 695 040

Regional Telecom Training Centre

Thiruvananthapuram – 695 040

प्रमाणपत्र

CERTIFICATE

This is to certify that

MOHAMED ASEEL

has successfully completed the training course on

INDUSTRIAL TRAINING ON TELECOM TECHNOLOGIES

conducted by this training centre from 22.05.2023 to 26.05.2023

Thiruvananthapuram
Dated 26.05.2023

Principal

QP13FMT01/067422

भारत संचार निगम लिमिटेड

(भारत सरकार का उद्यम)

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क्षेत्रीय दूरसंचार प्रशिक्षण केन्द्र

तिरुवनंतपुरम - 695 040

Regional Telecom Training Centre

Thiruvananthapuram – 695 040

प्रमाणपत्र

CERTIFICATE

This is to certify that

FATHIMATHU RASHA P P

has successfully completed the training course on

INDUSTRIAL TRAINING ON TELECOM TECHNOLOGIES

conducted by this training centre from 22.05.2023 to 26.05.2023

Thiruvananthapuram
Dated 26.05.2023

Principal

QP13FMT01/067431

भारत संचार निगम लिमिटेड

(भारत सरकार का उद्यम)

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क्षेत्रीय दूरसंचार प्रशिक्षण केन्द्र

तिरुवनंतपुरम - 695 040

Regional Telecom Training Centre

Thiruvananthapuram – 695 040

प्रमाणपत्र

CERTIFICATE

This is to certify that

NASHA NOURIN

has successfully completed the training course on

INDUSTRIAL TRAINING ON TELECOM TECHNOLOGIES

conducted by this training centre from 22.05.2023 to 26.05.2023

Thiruvananthapuram
Dated 26.05.2023

Principal

QP13FMT01/067409

भारत संचार निगम लिमिटेड

(भारत सरकार का उद्यम)

Bharat Sanchar Nigam Limited

(A Govt. of India Enterprise)

क्षेत्रीय दूरसंचार प्रशिक्षण केन्द्र

तिरुवनंतपुरम - 695 040

Regional Telecom Training Centre

Thiruvananthapuram – 695 040

प्रमाणपत्र

CERTIFICATE

This is to certify that

ABDUL KADER ANEES K V V

has successfully completed the training course on

INDUSTRIAL TRAINING ON TELECOM TECHNOLOGIES

conducted by this training centre from 22.05.2023 to 26.05.2023

Thiruvananthapuram
Dated 26.05.2023

Principal

QP13FMT01/067412

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CERTIFICATE

This is to certify that

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INDUSTRIAL TRAINING ON TELECOM TECHNOLOGIES

conducted by this training centre from 22.05.2023 to 26.05.2023

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Dated 26.05.2023

Principal

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

Industrial Training

At

BHARAT SANCHAR NIGAM LIMITED REGIONAL TELECOM TRAINING CENTRE

Thiruvananthapuram-695040

Submitted in partial fulfillment for the award of the degree of

Bachelor of Technology

Of

APJ Abdul Kalam Technological University

Submitted by

MOHAMED ASEEL (SNC22EC008)

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING(2023)

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY
PAYYANUR, KANNUR

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(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

BONAFIED CERTIFICATE

This is to certify that Industrial Training at **"BSNL Regional Telecom Training Centre , Thiruvananthapuram"** *is a bonafide record of the work done by* **MOHAMED ASEEL , ABDUL KHADER ANEES KVV , AKARSH KRISHNA , FATHIMATHU RASHA PP , NASHA NOURIN** of 2nd semester **DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING** *towards the partial fulfillment for the award of the degree pf* ***Bachelor of Technology*** *by APJ Abdul Kalam Technological University*

Faculty Advisor

Department of ECE

Head of the Department

Department of ECE

Dr. LEENA A V
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"It is not possible to prepare a project report without the assistance & Encouragement of other people. This one is certainly no exception."

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Dr. LEENA A V
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PAYYANUR, KANNUR

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PAYYANUR, KANNUR

COMPANY PROFILE

Company Name	:	Bharat Sanchar Nigam Ltd.
Type	:	State-owned enterprise.
Founded	:	15 September 2000
Headquarters	:	New Delhi, India
Industry	:	Telecommunications
Key people	:	Shri Pravin Kumar Purwar (Chairman)
Services	:	Fixed line and mobile telephony, Internet services, digital television, IPTV V
Revenue	:	18,595 Cr INR
Operating Income	:	1599 Cr
Employees	:	63 thousand
Website	:	www.bsnl.co.in

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BHARATH SANCHAR NIGAM LIMITED

VISION:

Be the leading telecom service provider in India.

Be a customer focused organization with excellence in customer care and marketing.

Leverage technology to provide affordable and innovative telecom services / products across customer segments.

MISSION:

Becoming the most trusted, preferred and admired telecom brand.

Providing reliable telecom services that are value for money.

Generating value for all stakeholders – employees, shareholders, vendors and business associates.

Excellence in customer services- friendly, reliable, time bound, convenient and courteous service.

Offering differentiated products / services tailored to different service segments.

Developing a marketing culture that is responsive to customer needs.

Maximizing return on existing assets with sustained focus on profitability.

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INTRODUCTION

Bharat Sanchar Nigam Limited is a state-owned telecommunications company headquartered in New Delhi, India. BSNL is one of the largest Indian cellular service providers, with over 87.1 million subscribers as of April 2011, and the largest land line telephone provider in India. BSNL is India's oldest and largest communication service provider (CSP). It had a customer base of 90 million as of June 2008. It has footprints throughout India except for the metropolitan cities of Mumbai and New Delhi, which are managed by Mahanagar Telephone Nigam Limited (MTNL). As of June 30, 2010, BSNL had a customer base of 27.45 million wire line and 72.69 million wireless subscribers.

BSNL is the only service provider, making focused efforts and planned initiatives to bridge the Rural-Urban Digital Divide ICT sector. In fact there is no telecom operator in the country to beat its reach with its wide network giving services in every nook & corner of country and operates across India except Delhi & Mumbai. Whether it is inaccessible areas of Siachen glacier and North-eastern region of the country BSNL serves its customers with its wide bouquet of telecom services. BSNL is numerous operator of India in all services in its license area.

The company offers wide ranging & most transparent tariff schemes designed to suite every customer. BSNL cellular service, Cell One, has 55,140, 282 2G cellular customers and 88,493 3G customers as on 30.11.2009. In basic services, BSNL is miles ahead, with 85 per cent share of the subscriber base and 92 percent share in revenue terms. BSNL has more than 2.5 million WLL subscribers and 2.5 million Internet Customers who access Internet through various modes. BSNL has been adjudged as the NUMBER ONE ISP in the country. BSNL has set up a world class multi-gigabit, multi-protocol convergent IP infrastructure that provides convergent services like voice, data and video through the same Backbone and Broadband Access Network. At present there are 0.6 Million broadband customers.

The company has vast experience in Planning, Installation, network integration and Maintenance of Switching & Transmission Networks and also has a world class ISO 9000 certified Telecom Training Institute.

The telephone is a telecommunication device that is used to transmit andreceive electronically or digitally encoded speech between two or more people conversing. It is one of the most common household appliances in the world today. Most telephone network which allows any phone user to communicate with almost any other user.

Telecommunication networks carry information signals among entities, which are geographically far apart. The entities are involved in the process of information transfer that may be in the form of a telephone conversation or a file transfer between two computers or message transfer between two terminals etc.With the rapidelly growing traffic and untargerted growth of cyberspace, telecommunication becomes a fabric of our life. The future challenges are enormous as we anticipate rapid growth items of new services and number of user.Telecommunication has evaluated and growth at an explosive rate in recent years and will undoubtedly continue to do so. The telecommunication links and switching were mainly designed for voice communication. With the appropriate attachments/equipments, they can be used to transmit data. A modern society, therefore needs new facilities including very high bandwidth switched data networks, and large communication satellites with small, cheap earth antennas.

TELECOM NETWORK

A telecom network, also known as a telecommunications network, is a collection of interconnected devices, infrastructure, and systems that enable the transmission and reception of voice, data, and other types of communication over long distances. These networks are essential for the functioning of modern communication systems, including telephone, mobile, internet, and television services.

Telecom networks consist of various components and technologies that work together to facilitate communication. Here are some key elements of a typical telecom network:

End-user devices: These include telephones, mobile phones, computers, tablets, and other devices used by individuals to initiate or receive communication.

Transmission media: This refers to the physical pathways through which communication signals are transmitted. Examples of transmission media include copper wires, fiber optic cables, and wireless channels.

Switching systems: Switches are devices that enable the routing of communication signals between different users or network nodes. They facilitate the establishment, maintenance, and termination of connections within the network.

Infrastructure: Telecom networks require a robust infrastructure to support their operation. This includes equipment such as base stations, routers, servers, data centers, and towers. Infrastructure also encompasses power supply systems, cooling mechanisms, and physical facilities for housing network equipment.

Protocols and standards: Telecommunication networks rely on various protocols and standards to ensure compatibility and efficient communication between different devices and systems. Examples of protocols include TCP/IP (Transmission Control Protocol/Internet Protocol) for internet communication and GSM (Global System for Mobile Communications) for mobile networks.

Network management systems: These systems monitor, control, and manage the network's performance, security, and resources. They provide tools for tasks such as network configuration, fault detection and resolution, performance optimization, and security management.

Telecom networks can be classified into different types based on their coverage area and technology. These include:

Local Area Network (LAN): Covers a small area like a home, office, or building and provides communication within that limited area.

Wide Area Network (WAN): Spans larger areas, such as cities or countries, and connects multiple LANs and other networks together.

Metropolitan Area Network (MAN): Covers a metropolitan area, typically larger than a LAN but smaller than a WAN.

Mobile Network: Enables wireless communication through cellular networks, allowing mobile devices to connect to each other and the internet.

Internet: The global network that interconnects millions of devices and networks worldwide, providing access to various online services and resources.

Telecom networks play a crucial role in enabling communication and connectivity in today's interconnected world. They form the backbone of telecommunications infrastructure, facilitating voice calls, data transfer, internet access, and other communication services.

CALL SETUP

• When a subscriber calls to another subscriber first its request goes to the nearest switching centre that is PST (Public Switching

Telecommunication Network). Then it processes the caller and subscriber's number if it exists in the same BSC then call setup is completed.

• If subscriber is not in the same BSC (Base Switching Centre) then call transfer to MSC (Main Switching Centre) then it transfers the call to prior

BSC then call setup is completed.

• If Caller calls to a mobile subscriber then call transfer is done by MTSO now call transfer is done on BTSs (Base Transceiver Station) and call setup is completed.

FUNCTION OF EXCHANGE

• Exchange of information with subscriber lines with other exchange. This is done by two type of signaling:

1. Inchannel signaling
2. Common channel signaling

• Processing of signaling information and controlling the operation of signaling network.

• Charging and billing.

MDF(MAIN DISTRIBUTION FRAME)

M.D.F. is a media between switching network and subscriber's line. It is a termination point within the local telephone exchange where exchange equipment and terminations of local loops are connected by jumper wires.

FUNCTIONS OF MDF:

• All cable copper wires supplying services through user telephone lines are terminated and distributed through MDF.

• The most common kind of large MDF is a long steel rack accessible from both sides. Each jumper is a twisted wire.

It consists of local connection and broadband connection frames for the main Exchange area.

• The MDF usually holds central office protective devices including heat coils and functions as a test point between a line and the office.

• It provides testing of calls.

• it checks whether fault is indoor or external.

• All lines terminate individually.

POWER PLANT

• It provides -48V to the switch rooms and 48V to the connections.

• Batteries are artificially discharged once in a year for their maintenance.

• Cooling is provided through fans & AC.

• There is earth region too for protection.

STANDARDS OF TELECOMMUNICATION

Standards in telecommunications refer to a set of guidelines and specifications that define how different telecommunications systems and technologies should operate and interoperate with each other. These standards ensure compatibility, reliability, and interoperability among various telecommunications devices and networks.

Telecommunications standards are developed and maintained by standardization organizations such as the International Telecommunication Union (ITU), Institute of Electrical and Electronics Engineers (IEEE), European Telecommunications Standards

Institute (ETSI), and others. These organizations collaborate with industry experts, regulators, and stakeholders to establish consensus-based standards.

Here are some key areas and examples of telecommunications standards:

Network Protocols: Standards like TCP/IP (Transmission Control Protocol/Internet Protocol) define how data is transmitted over computer networks, including the Internet.

Wireless Communication: Standards such as GSM (Global System for Mobile Communications), CDMA (Code Division Multiple Access), and LTE (Long-Term Evolution) ensure compatibility and interoperability between different mobile networks and devices.

Voice and Data Compression: Standards like G.711 and G.729 define how voice signals are compressed for efficient transmission over networks. Data compression standards like JPEG and MPEG govern the compression of images and videos, respectively.

Broadband Technologies: Standards such as DSL (Digital Subscriber Line), cable, and fiber-optic technologies define how high-speed internet access is provided to homes and businesses.

Voice over IP (VoIP): Protocols like SIP (Session Initiation Protocol) and H.323 establish standards for voice and multimedia communication over IP networks.

Quality of Service (QoS): Standards like Differentiated Services (DiffServ) and MPLS (Multiprotocol Label Switching) ensure the efficient management and prioritization of network traffic to deliver reliable and high-quality services.

Security: Standards like SSL/TLS (Secure Sockets Layer/Transport Layer Security) and IPsec (Internet Protocol Security) provide encryption and authentication mechanisms to secure communications over networks.

Internet of Things (IoT): Standards such as MQTT (Message Queuing Telemetry Transport) and CoAP (Constrained Application Protocol) enable efficient communication and interoperability between IoT devices.

These are just a few examples, and the field of telecommunications standards is vast and continuously evolving as technology advances. These standards play a crucial role in enabling seamless communication and interoperability across different networks, devices, and services in the telecommunications industry.

COMPUTER NETWORKING

Computer networking is the practice of connecting multiple computers and devices together to facilitate communication, data sharing, and resource sharing. It enables the exchange of information and resources among different devices, such as computers, servers, printers, and other network-enabled devices. Networking allows computers to communicate and share resources both locally within a small area, such as a home or office, and globally over long distances using the internet.

Key Concepts in Computer Networking:

Network Components: Network components include computers, routers, switches, hubs, modems, cables, and wireless access points, among others. These components work together to establish and maintain network connections.

Protocols: Network protocols are a set of rules and standards that define how devices communicate and exchange data over a network. Examples of network protocols include TCP/IP (Transmission Control Protocol/Internet Protocol), Ethernet, Wi-Fi (Wireless Fidelity), and HTTP (Hypertext Transfer Protocol).

IP Addressing: IP (Internet Protocol) addressing is a system that assigns a unique numerical address to each device connected to a network. An IP address identifies the device's location on the network, enabling data to be sent to and received from specific devices.

Network Topologies: Network topologies refer to the physical or logical layout of a network. Common topologies include bus, star, ring, mesh, and hybrid. Each topology has its own advantages and disadvantages in terms of cost, scalability, and fault tolerance.

Local Area Network (LAN): A LAN is a network that connects devices within a limited geographic area, such as a home, office, or school. LANs are typically used for sharing resources like printers and file servers.

Wide Area Network (WAN): A WAN is a network that spans a large geographic area, such as multiple offices or cities. The internet is an example of a WAN, connecting computers and networks worldwide.

Network Security: Network security involves protecting a network and its data from unauthorized access, breaches, and attacks. It includes measures like firewalls, encryption, access control, and intrusion detection systems to ensure the confidentiality, integrity, and availability of network resources.

Network Troubleshooting: Network troubleshooting is the process of diagnosing and resolving issues that affect network performance or connectivity. This may involve identifying faulty hardware, misconfigured settings, or network congestion.

Wireless Networking: Wireless networking allows devices to connect and communicate without the need for physical cables. Wi-Fi is a common wireless technology used for LAN and internet connectivity.

Cloud Networking: Cloud networking refers to the use of cloud computing resources, such as virtual servers or storage, to build and manage networks. It offers scalability, flexibility, and cost-effectiveness compared to traditional on-premises networking infrastructure.

These concepts provide a general overview of computer networking, but the field is vast and continuously evolving as technology advances. Professionals in the networking field may specialize in areas such as network administration, network design, network security, or network engineering.

IP ADDRESSING

IP addressing is a fundamental aspect of computer networking that allows devices to communicate with each other over the Internet or a local network. An IP address is a unique numerical label assigned to each device connected to a network, whether it's a computer, smartphone, server, or any other networked device.

There are two main versions of IP addresses in use today:

IPv4 (Internet Protocol version 4): This is the older and more widely used version. An IPv4 address is a 32-bit number expressed in four sets of decimal numbers separated by periods (e.g., 192.168.0.1). It provides approximately 4.3 billion unique addresses, which are becoming scarce due to the rapid growth of the Internet.

IPv6 (Internet Protocol version 6): This is the newer version developed to address the depletion of IPv4 addresses. An IPv6 address is a 128-bit number expressed in eight sets of hexadecimal digits separated by colons (e.g., 2001:0db8:85a3:0000:0000:8a2e:0370:7334). IPv6 provides an enormous number of unique addresses, allowing for the continued growth of networked devices.

IP addresses play a crucial role in routing data packets across networks. When a device wants to send data to another device, it uses the destination device's IP address to route the data through the network, ensuring it reaches the intended recipient.

IP addresses can be assigned dynamically or statically. Dynamic IP addresses are automatically assigned by a DHCP (Dynamic Host Configuration Protocol) server when a device connects to a network. Statically assigned IP addresses are manually configured by a network administrator and remain fixed unless changed manually.

In addition to IP addresses, network devices also have subnet masks and default gateways. Subnet masks determine the network portion of an IP address and the host portion, while default gateways serve as the exit point for data packets that need to be sent outside the local network.

Overall, IP addressing is a critical component of modern networking, enabling devices to communicate and exchange data across networks, including the vast infrastructure of the Internet.

NETWORK ADDRESS TRANSLATION[NAT]

Network Address Translation (NAT) is a technique used in computer networking to allow multiple devices on a local network to share a single public IP address. It provides a way to conserve IP addresses and enables communication between devices on the local network and the internet.When a local network wants to communicate with devices on the internet, NAT translates the private IP addresses used within the local network into a single public IP address. This translation occurs at the network gateway, typically a router or firewall that connects the local network to the internet

NAT works by maintaining a translation table that maps the private IP addresses and port numbers of outgoing network packets to corresponding public IP addresses and port numbers. When a packet leaves the local network, the NAT device replaces the private IP address and port number with the public IP address and a unique port number from its pool. This way, the communication appears to originate from a single public IP address.

When a response is received from the internet, the NAT device references the translation table to determine which device on the local network the response should be forwarded to. It then replaces the destination IP address and port number with the corresponding private IP address and port number before delivering the packet to the appropriate device.

NAT provides several benefits, including:

IP Address Conservation: NAT allows multiple devices to share a single public IP address, reducing the need for unique public IP addresses for every device on the local network.

Security: NAT acts as a barrier between the internet and the local network, hiding the internal IP addresses from external entities. This provides a level of security by preventing direct access to devices on the local network from the internet.

Simplified Network Configuration: With NAT, devices on the local network can use private IP addresses, which are reserved for local use and not routable on the internet. This simplifies network configuration and makes it easier to manage IP address allocation within the local network.

NAT comes in different forms, such as Static NAT, Dynamic NAT, and Network Address Port Translation (NAPT, also known as Port Address Translation or PAT). These variations offer different levels of flexibility and functionality for translating IP addresses and port numbers.

AGGREGATION NETWORK

An aggregation network refers to a type of network architecture commonly used in machine learning and data analysis tasks, particularly in the field of deep learning. The purpose of an aggregation network is to combine information from multiple sources or branches of a network into a single representation or output.

In deep learning, aggregation networks are often used in tasks such as object detection, image segmentation, natural language processing, and recommendation systems, among others. These tasks typically involve processing complex data structures or large amounts of data, and aggregating information from different sources is crucial for making accurate predictions or generating meaningful insights.

Aggregation networks can take various forms depending on the specific task and architecture design. Some common approaches include:

Pooling: Pooling layers, such as max pooling or average pooling, are used to aggregate information spatially or temporally within a network. These layers reduce the dimensionality of the input while retaining important features.

Attention Mechanisms: Attention mechanisms allow the network to dynamically focus on different parts of the input or different sources of information. They assign different weights to different inputs based on their relevance, enabling the network to selectively attend to important features or context.

Ensemble Methods: Aggregation networks can combine the predictions or outputs of multiple individual models or branches within a larger network. This ensemble approach often leads to improved performance by leveraging the diverse strengths of each model or branch.

Graph Aggregation: In tasks involving graph-structured data, such as social networks or molecular structures, aggregation networks can aggregate information from neighboring nodes or subgraphs. Graph pooling, graph convolutional networks, or graph attention networks are some techniques used for this purpose.

Overall, aggregation networks play a crucial role in harnessing the power of deep learning models by effectively combining and consolidating information from different sources or branches. These networks enable the extraction of more meaningful representations and improve the overall performance of machine learning models in various domains.

TIME DIVISION MULTIPLEXING[TDM]

Time Division Multiplexing (TDM) is a telecommunications technique that allows multiple signals to be transmitted simultaneously over a single communication channel. It divides the available time on the channel into several time slots and allocates each slot to a different signal or data stream.In TDM, the channel's bandwidth is divided into fixed-duration time slots. Each time slot is assigned to a specific sender or data source. The sender transmits its data within its allocated time slot, and the receiver demultiplexes the combined signal to extract the individual data streams.

The key principle of TDM is that each sender or data source is allocated a time slot in a cyclic manner. The time slots are usually very short, typically on the order of milliseconds or microseconds, and they repeat in a continuous cycle. By taking turns in transmitting during their respective time slots, multiple senders can effectively share the same channel without interfering with each other.

TDM is commonly used in various applications, including telecommunications, digital telephony, and computer networking. In telephony, TDM is used to transmit multiple voice conversations over a single physical link, such as a fiber optic cable or a copper wire. In computer networking, TDM can be employed to multiplex multiple data streams onto a shared transmission medium, such as a network cable or a wireless channel.

One of the advantages of TDM is its simplicity and efficiency. It allows multiple signals to be transmitted over a single channel, effectively increasing the channel's capacity. However, TDM requires strict synchronization between the sender and receiver to ensure that the time slots are allocated and interpreted correctly.

It's worth noting that there are variations of TDM, such as synchronous TDM (STDM) and statistical TDM (StatTDM), which provide different mechanisms for allocating time slots based on the needs of the specific application or system.

OPTICAL COMMUNICATION

Optical communication, also known as optical telecommunications or optical networking, is a method of transmitting information using light as the carrier. It involves the use of optical fibers or free-space systems to transmit data in the form of pulses of light.In optical communication systems, information is encoded onto light waves in the form of binary signals (0s and 1s). These light signals can then be transmitted over long distances with minimal loss of signal quality.

Key Components of Optical Communication:

Transmitter: The transmitter is responsible for converting electrical signals into optical signals. It typically consists of a light source, such as a laser diode, that emits light pulses representing the encoded data.

Optical Fiber: Optical fibers are thin strands of flexible, transparent material (usually glass or plastic) used to transmit light signals. They have the ability to guide light along their length through a principle called total internal reflection.

Receiver: The receiver is responsible for detecting and decoding the optical signals back into electrical signals. It typically consists of a photodetector, such as a photodiode, which converts the incoming light into electrical current.

Modulation and Demodulation: Modulation is the process of encoding information onto the light signal, while demodulation is the process of extracting the encoded information from the received light signal. Common modulation techniques include amplitude modulation (AM), frequency modulation (FM), and phase modulation (PM).

Advantages of Optical Communication:

High Bandwidth: Optical fibers have a much higher bandwidth compared to traditional copper wires, enabling the transmission of large amounts of data over long distances.

Low Attenuation: Optical signals experience minimal loss (attenuation) over long distances compared to electrical signals transmitted through copper wires. This allows for longer transmission distances without significant signal degradation.

Immunity to Electromagnetic Interference: Optical communication is not affected by electromagnetic interference or radio frequency interference, which can disrupt traditional copper-based communication.

Security: Optical communication is inherently more secure than electrical communication since it is difficult to tap or intercept the light signals transmitted through optical fibers without causing noticeable signal loss.

Applications of Optical Communication:

Telecommunications: Optical communication forms the backbone of modern telecommunication networks, including long-distance telephone systems, internet backbones, and mobile networks.

Data Centers: Optical communication is widely used within data centers to connect servers and networking equipment, enabling high-speed data transfer and efficient communication between devices.

Cable Television: Optical fibers are used to transmit high-quality video, audio, and data signals in cable television networks, allowing for the delivery of multiple channels and high-speed internet access.

Medical Imaging: Optical fibers are used in medical imaging devices such as endoscopes and laparoscopes to transmit light and images for diagnostic purposes.

Military and Aerospace: Optical communication is used in military and aerospace applications for secure and high-speed data transmission between various systems and sensors.

Overall, optical communication has revolutionized the way we transmit and communicate information, enabling faster, more reliable, and secure data transfer over long distances.

OPTIC FIBER

Optic fiber, also known as optical fiber, is a type of telecommunications medium that is used to transmit information in the form of light pulses. It consists of a thin strand of glass or plastic, called the core, surrounded by a cladding layer with a lower refractive index. The cladding layer helps to confine the light within the core by reflecting it back into the core when it approaches the boundary.

The core of an optical fiber is typically made of high-quality silica glass, which has excellent transparency to light signals. The diameter of the core can vary, but it is usually around 9 to 125 micrometers (μm), which is thinner than a human hair. The cladding layer is made of a slightly different type of glass or plastic that ensures the light signals stay within the core.

Light signals travel through the core of an optical fiber by repeatedly reflecting off the cladding boundary in a process called total internal reflection. This allows the light to travel

long distances without significant loss of signal strength. The fiber-optic cables, which are bundles of many individual fibers, are used to transmit and receive the light signals.

Optical fibers are widely used in telecommunications networks, such as long-distance telephone lines, internet connections, and cable television systems, due to their high bandwidth and low signal attenuation. They offer several advantages over traditional copper cables, including faster data transmission, greater capacity, resistance to electromagnetic interference, and longer transmission distances without requiring signal boosters.

The deployment of optic fiber infrastructure has revolutionized communication and enabled the development of high-speed internet, video streaming, and other data-intensive applications. Fiber-optic technology continues to advance, with research focusing on increasing data rates, improving efficiency, and reducing costs, making it a vital component of modern communication systems.

OPTIC FIBER CABLES

Optic fiber cables, also known as optical fiber cables or simply fiber optic cables, are a type of telecommunications cable used to transmit information in the form of light pulses. They are made up of one or more strands of glass or plastic fibers enclosed within a protective covering.The core of an optic fiber cable is a thin strand of glass or plastic called the fiber. It is designed to carry light signals over long distances with minimal loss or interference. The fiber consists of a core, which carries the light signals, surrounded by a cladding layer that reflects the light back into the core, preventing it from escaping.

Here are some key features and benefits of optic fiber cables:

High bandwidth: Fiber optic cables offer a much higher bandwidth compared to traditional copper cables. They can transmit large amounts of data over long distances without significant degradation in signal quality.

Fast data transmission: Light signals travel at incredibly high speeds through optic fiber cables. This enables fast data transmission and supports high-speed internet connections, video streaming, and other bandwidth-intensive applications.

Long-distance transmission: Optic fiber cables can transmit signals over long distances without suffering from signal degradation. They are commonly used for long-haul telecommunications and undersea cables.

Immunity to electromagnetic interference: Unlike copper cables, fiber optic cables are immune to electromagnetic interference (EMI) and radio frequency interference (RFI). This makes them ideal for environments with high levels of electrical noise, such as industrial or power plant settings.

Secure and reliable: Fiber optic cables are difficult to tap into, providing a higher level of security for transmitting sensitive information. They are also less prone to damage from environmental factors like lightning, moisture, or temperature fluctuations.

Lightweight and flexible: Optic fiber cables are lightweight and flexible, making them easier to install and handle compared to bulky copper cables. They can be easily routed around corners, bent, and placed in tight spaces.

Multiple applications: Fiber optic cables are used in various applications, including telecommunications, internet connectivity, cable television (CATV), data centers, local area networks (LANs), and high-speed interconnects between devices.

It's worth noting that optic fiber cables require specialized equipment to transmit and receive light signals, such as optical transceivers, switches, and multiplexers. These components convert electrical signals into light signals and vice versa, allowing data to be transmitted through the cables.

OPTICAL TIME DOMAIN REFLECTOMETER[OTDR]

An Optical Time Domain Reflectometer (OTDR) is a specialized instrument used in the field of fiber optics to characterize and troubleshoot optical fiber links. It provides a means to measure the optical loss and locate any faults or abnormalities in the fiber.

The primary function of an OTDR is to send short pulses of light into an optical fiber and measure the backscattered and reflected light as a function of time. By analyzing the reflections and backscattering, an OTDR can determine the location and magnitude of various events along the fiber, such as splices, connectors, bends, and breaks.

Here's a general overview of how an OTDR works:

Light Generation: The OTDR emits short pulses of light, typically in the form of laser or LED light. The light is launched into the fiber under test through a connector.

Light Propagation: The emitted light travels along the fiber and undergoes multiple phenomena such as backscattering, reflection, and refraction at different points along the fiber.

Detection: The OTDR receiver detects the backscattered and reflected light signals that return to the instrument after interacting with events in the fiber. The receiver typically uses a photodetector to convert the optical signals into electrical signals.

Time-Domain Analysis: The OTDR analyzes the received signals in the time domain. It measures the time taken for the light to travel back to the OTDR after reflection or backscattering, which provides information about the distance to the events.

Data Display: The OTDR processes the measured data and displays it in the form of an OTDR trace or a graphical representation. The trace shows the magnitude of the received signals as a function of time or distance. By interpreting the trace, technicians can identify the locations of connectors, splices, bends, and breaks in the fiber.

OTDRs are widely used in the installation, maintenance, and troubleshooting of optical fiber networks. They help network technicians assess the quality of fiber links, detect and locate faults or losses, and verify the integrity of the fiber infrastructure.

VISUAL FAULT LOCATOR(VFL)

A visual fault locator (VFL) is a compact, handheld device used in fiber optic network installations, maintenance, and troubleshooting. It emits a bright red laser beam that helps identify breaks, bends, and other faults in fiber optic cables.

Here are some key features and uses of a visual fault locator:

Laser Diode: The VFL uses a laser diode to generate a highly visible red light. The laser light is easily visible even through long distances of fiber optic cable.

Fault Identification: By connecting the VFL to one end of a fiber optic cable, you can scan the length of the cable to locate faults such as breaks, bends, or tight bends that may cause signal loss or degradation.

Connector and Splice Inspection: VFLs are also used for inspecting connectors and splices. By attaching the VFL to one end of the cable and looking for leaks or irregularities in the laser light, you can detect poorly terminated connectors or problematic splices.

Continuity Testing: VFLs can be used to verify the continuity of a fiber optic link. By coupling the VFL to one end of the cable and observing the laser light at the opposite end, you can ensure that the fiber is intact and functioning properly.

Distance Estimation: Some VFL models provide distance estimation capabilities. By measuring the time it takes for the laser light to travel through the fiber and return, the VFL can approximate the length of the fiber optic link.

Portable and Easy to Use: VFLs are typically lightweight, compact, and battery-powered, making them easy to carry and operate in the field. They often come with a pocket clip or a lanyard for convenience.

It's important to note that while VFLs are useful for identifying faults in fiber optic cables, they should be used with caution. The laser light emitted by a VFL can be harmful to the eyes if viewed directly, so it's essential to follow safety guidelines and avoid pointing the laser beam towards anyone's eyes.

POWER METER

A power meter is a device used to measure the electrical power consumed by an electrical device or system. It provides information about the amount of electrical energy being used, allowing users to monitor and manage their power consumption. Power meters are commonly used in homes, businesses, and industrial settings to track energy usage, optimize efficiency, and identify potential areas for energy savings.

There are different types of power meters available, depending on the specific application and requirements. Here are a few common types:

Analog Power Meters: These are traditional power meters with a rotating disc or pointer that indicates the power consumption on a mechanical display.

Digital Power Meters: These meters use digital displays to show power consumption. They provide more accurate readings and often offer additional features such as data logging, peak power tracking, and communication interfaces for remote monitoring.

Smart Power Meters: Smart meters are advanced digital power meters that offer two-way communication capabilities. They can communicate with the utility company, providing real-time data on energy consumption and enabling features like time-of-use pricing and remote meter reading.

Clamp-On Power Meters: These meters are designed to measure power consumption in specific circuits or individual appliances without the need for direct electrical connections. They use clamps to measure the magnetic field generated by the current flow.

Portable Power Meters: Portable power meters are handheld devices that can be used for on-site energy audits or troubleshooting. They are compact, easy to use, and often offer comprehensive measurement capabilities.Power meters typically measure various electrical parameters, including voltage, current, power factor, and energy consumption. They can help users understand their electricity usage patterns, identify energy-saving opportunities, and assess the efficiency of electrical systems and devices.

CONCLUSION

Bharat Sanchar Nigam Ltd. Formed in October 2000 is the world's 7th largest Telecommunications company providing comprehensive range of telecom services in India: Wired-line, CDMA mobile, GSM mobile, Internet, Broadband, Carrier Service, MPLS-VPN,VSAT, VolP services, IN services,etc. Presently it is one of the largest and leading public sector unit in Idia. The training was aimed at providing the students with basic knowledge about telecommunications and the working of telecom exchanges. The various aspects regarding the working of telecommunications, the various modules in the telecom exchange and their importance in the exchange process was explained. Both wired and wireless (mobile) communication aspects were dealed with. Mobile communication ‡ both CDMA and GSM + was extensively covered. Also, information about broadband internet and itsrequirements was provided. Along with technical lecture sessions, practical sessions were also conducted where the telecom exchanges and their equipment were shown and explained.

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

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Sl.No	Name	Industry	Duration
1	Arjun Ashok	I-band technologies	2weeks 29/12/2022-14/01/2022
2	Jithin Sasidharan N V	I-band technologies	2weeks 29/12/2022-14/01/2022
3	Keerthana C V	I-band technologies	2weeks 29/12/2022-14/01/2022
4	Sanishma Sachithanand	I-band technologies	2weeks 29/12/2022-14/01/2022
5	Vrinda Ramachandran K	TechWingSys	25/10/2021 – 29/10/2021
6	Aswathi Ashokan	TechWingSys	25/10/2021 – 29/10/2021
7	Mabitha C	TechWingSys	25/10/2021 – 29/10/2021
8	Sneha Surendran N	TechWingSys	25/10/2021 – 29/10/2021
9	Hrithika K V	TechWingSys	25/10/2021 – 29/10/2021
10	Remna P	TechWingSys	25/10/2021 – 29/10/2021

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iBAND Technologies

14/01/2022

CERTIFICATE

This is to certify that Keerthana C V , having the university register number : SNC19EC003 , B.Tech Electronics & Communication Engineering student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed internship training program in ' Robotics & Embedded Systems' at IBAND Technologies, Kochi from 29/12/2021 to 14/01/2022.

For IBAND Technologies

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IBAND TECHNOLOGIES KOCHI

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14/01/2022

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This is to certify that Jithin Sasidharan N V, having the university register number SNC19EC002 , B.Tech Electronics & Communication Engineering student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed internship training program in ' Robotics & Embedded Systems' at IBAND Technologies, Kochi from 29/12/2021 to 14/01/2022.

For IBAND Technologies

HR Manager

IBAND TECHNOLOGIES KOCHI

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This is to certify that Sanishma Sachithanand , having the university register number : SNC19EC005 , B.Tech Electronics & Communication Engineering student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed internship training program in ' Robotics & Embedded Systems' at IBAND Technologies, Kochi from 29/12/2021 to 14/01/2022.

For IBAND Technologies

HR Manager

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(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

Industrial Training

On

Robotics & Embedded Systems

At

IBAND TECHNOLOGIES, KOCHI

Submitted in partial fulfilment for the award of the degree of

Bachelor of Technology

Of

APJ Abdul Kalam Technological University

Submitted by

Jithin Sasidharan N V	**SNC19EC002**
Keerthana C V	SNC19EC003
Mariyambi	**SNC19EC004**
Sanishma Sachithanand	**SNC19EC005**

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

2022

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BONAFIDE CERTIFICATE

This is to certify that Industrial Training at "**IBAND TECHNOLOGIES, KOCHI**" *is a bonafide record of the work done by* **Mr. ARJUN ASOK, Mr. JITHIN SASIDHARAN N V , Ms. KEERTHANA C V, Ms.MARIYAMBI** and **Ms.SANISHMA SACHITHANAND** *of seventh semester* ***DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING*** *towards the partial fulfillment for the award of the degree of* **Bachelor of Technology** *by* **APJ Abdul Kalam Technological University**

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ACKNOWLEDGEMENT

"It is not possible to prepare a project report without the assistance & Encouragement of other people. This one is certainly no exception."

First of all we would like to thank the almighty, whose blessings have made our endeavor a success.

We are extremely grateful to our dear Principal, Dr. V K JANARDHANAN, for providing us all the facilities for the completion of this Industrial Training.

Also, we would like to express our boundless gratitude to Mr. RAVEENDRAN K, Head of the Department for her invaluable remarks and supervision.

With immense pleasure, we would like to express our heartiest gratitude to Ms.ARCHANA C P , tutor and , whose timely inputs and suggestions were most valuable. We express our wholehearted warm thanks for her guidance during the work.

Moreover, we are grateful to each and every staff of the Electrical and Electronics dept.

Finally, we thank our parents and friends for their help during our endeavor.

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REFERENCES

- www.iBAND Technologies.in
- www.wikipedia.org

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1. INTRODUCTION

iBAND Technologies is a well established company with a bunch of dynamic experts, providing solutions in the field of Information and Communication Technologies. Our creative team spends to understand your business and plans out a mockup. Our experienced team follows a set come close to to make sure we give you the best design. Our designs are done keeping in mind your aim at viewers and your business purpose/vision. The team of iBAND Technologies comprises of IT engineers and marketing professionals that understand your business. Our people take great pride in delivering solutions to make a positive impact on our customer's business. iBand Technologies specializes in the development of innovative wearable devices aimed at enhancing human experiences through technology. Their product range includes smart watches, fitness trackers, and sleep monitoring devices, all designed to seamlessly integrate into users' daily lives.

Internship Objectives:

1. Gain hands-on experience in the development process of wearable devices.
2. Contribute to ongoing research projects in the R&D department.
3. Learn about the challenges and opportunities in the wearable technology industry.
4. Enhance technical skills in software and hardware development.

2. FEATURES

iBAND provides telephone recording list-call log with date-time, incoming-outgoing numbers, duration and more information. Ÿ Crystal clear voice recording for Incoming & Outgoing telephone calls. Ÿ Play list searching by date-time, Incoming -Out going numbers, Party name, Talk-time & more information. Ÿ Multiple-Format Recording Ÿ Multimedia Operations like rewind, forward, and replay Ÿ Single Unified interface to search and to listen Voice Logs

3. COMPUTER TELEPHONE INTEGRATED SYSTEMS

Computer Telephony Integration (CTI) is a technology that bridges the gap between computers and phone systems. Specifically, in call centers, CTI allows call center agents to make and receive voice calls directly within their desktop computer interface, eliminating the need for a physical desk phone

1. Implementation Considerations

- Compatibility assessment with existing telephony and computer systems
- Employee training and change management strategies
- Security and compliance considerations, including data encryption and regulatory compliance

2. Future Trends in CTI

- Integration with artificial intelligence (AI) and machine learning technologies
- Expansion of omnichannel communication capabilities
- Continued emphasis on data analytics and predictive insights

4 .COURSES OFFERED AT IBAND TECHNNOLOGIES

SERVICES

iBAND offer world-class service, friendly working relationships and excellent value for money. For establishing partnerships is a means to provide customized solutions that will help make company more productive and competitive. The aim is to bring extra value to your business through adopting world-class processes, technological innovations and a knowledge-driven collaborative approach.Strict control is maintained over quality with a Two Step quality check over outputs.

WEB APPLICATION

iBAND Technologies provides website, web-portal, and web-application development services to small and large enterprises alike. We leverage the best of technologies from J2EE to .NET to AJAX, in order to develop the best solutions for our clients - while minimizing the time and cost involved.We are well versed and experienced in developing customized E-commerce solutions using state of the art technologies like Zend Framework, Smarty Templates etc Be it a personal website or a large portal that is required, we carefully assess all your needs to deliver innovative and creative solutions, ensuring that you will be satisfied with the end-product.

Our Web Services includes:

- Content Management System .
- Banner Management System.
- Newsletter Management System
- E-Commerce: Shopping Cart & Payment Gateway .
- Custom Web Applications

TELECOM APPLICATION:

Every businessman believes that 80% their inquiry, order booking, payement

commitment and complaints are made over phone. These conversations are important for your business and you often require record calls. Our products provide an easy and prompt solution to manage the communication systems in each and every aspect of public as well as private sector iBAND Voice Logger records telephone calls in your PC. Many people think the voice logger as only a tapping device or

telephone recording device but in fact voice logger is used for keep records of important calls which helps to increase security, training purpose, decrease errors and improve service quality. Voice Logger records calls of your tele-marketing callers, trading agents, customer care and verification department. You can solve dispute and avoid communication gap with your customer. Moreover, you can reduce high bills by avoiding misuse of phone. Our products serves the purpose of different business segments including call centers, stock brokers, banks, hospitals, business enterprises, educational institutions and legal offices around the world. These products allow people to communicate with computers through phones thus opening up opportunities for different services. Implementing our products streamlines business processes, increases productivity and improves customer service.

MOBILE APP DEVOLEPMENT

At iBAND Technologies we have a passion for mobile app development and a strong marketing background. Our talented designers and programmers are the best in the industry and each have a keen eye for detail. We develop apps that build brand awareness, brand loyalty and make consumers fall in love with your business and products. From games to gadgets, our apps are full time marketing machines in the pockets of your target audience. Bring us your great idea or let us dream up a concept for you and together we can make it happen Not sure what you want… just know you need an app? No problem! Our team loves a challenge and can dream up an awesome app concept for your brand or business.

CUSTOM SOFTWARE DEVELOPMENT

In order to keep pace with the rapidly changing business world, it is necessary to transform and re-define existing applications and systems by leveraging newer technologies. If you are an IT products/services company looking for custom tools for your developers or IT personnel in order to optimize internal resources, we can help satisfy those requirements. At Infozign, we leverage the power of Eclipse and RCP to develop custom components to meet your requirements. These range from simple data entry applications to Domain Specific Languages and Model-Driven Application Tooling.

5 CONCLUSION

My internship experience at iBand Technologies has been invaluable in shaping my professional growth and providing me with practical insights into the dynamic world of technology and innovation. Throughout my time at iBand, I have had the opportunity to work alongside talented professionals, engage in challenging projects, and immerse myself in a vibrant and collaborative work environment.

One of the most significant takeaways from my internship at iBand Technologies is the enhancement of my technical skills. Through hands-on project assignments and access to cutting-edge technologies, I have gained proficiency in various tools, programming languages, and software platforms relevant to my field of study. The mentorship and guidance provided by experienced professionals have accelerated my learning curve and equipped me with practical knowledge that complements my academic background.

Moreover, my internship experience has fostered the development of essential soft skills, including communication, teamwork, and problem-solving. Engaging in collaborative projects and interacting with diverse teams has honed my ability to effectively communicate ideas, adapt to different work styles, and navigate complex challenges. These interpersonal skills are invaluable assets that will serve me well in my future academic and professional pursuits.

Beyond skill development, my internship at iBand Technologies has provided me with a firsthand glimpse into the inner workings of a tech-driven organization. I have gained insights into the product development lifecycle, project management methodologies, and the importance of innovation and adaptability in a competitive market landscape. Witnessing the dedication and passion of the iBand team has inspired me to pursue excellence and embrace a mindset of continuous learning and growth.

Looking ahead, I am excited to apply the knowledge and experiences gained during my internship at iBand Technologies to my academic studies and future career endeavors. The lessons learned and connections made during this internship will undoubtedly shape my trajectory as a technology professional and contribute to my long-term success.

In conclusion, I am immensely grateful for the opportunity to intern at iBand Technologies and for the support and mentorship provided by the entire team. My internship experience has been enriching, rewarding, and transformative, and I am confident that the skills and insights gained will serve as a solid foundation for my future aspirations in the field of technology.

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Sl.No	Name	Industry	Duration
1	Arjun Ashok	Alphasys, 3D printing soultions	5days 25/05/2021-29/05/2021
2	JithinSasidharan N V	Alphasys, 3D printing soultions	5days 25/05/2021-29/05/2021
28	VrindaRamachandran	Alphasys, 3D printing soultions	5days 25/05/2021-29/05/2021

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ALPHASYS 3D PRINTING SOLUTIONS

Reg No: K2/3344998/2021/CRUTIOMPA

CERTIFICATE OF INTERNSHIP

awarded to

Arjun Ashok K

from

Sree Narayana Guru College of Engineering and Technology

In recognition to his/her participation in 5 days online internship program on ***Additive Manufacturing Electronics & Control Systems*** conducted by ***Alphasys 3D Printing Solutions*** from ***25.05.2021 to 29.05.2021***

Date : 01.06.2021
Cert. ID : ASIE2150

Alphasys 3D Printing Solutions Muvattupuzha

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(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

Industrial Training

On

ADDITIVE MANUFACTURING ELECTRONICS AND CONTROL SYSTEM

at

ALPHASYS 3D PRINTING SOLUTION, MUVATTUPUZHA

Submitted in partial fulfilment for the award of the degree of

Bachelor of Technology

Of

APJ Abdul Kalam Technological University

Submitted by

ARJUN ASOK(SNC19EC001)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

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*This is to certify that Industrial Training at "***ALPHASYS 3D PRINTING SOLUTION, MUVATTUPUZHA"** *is a bonafide record of the work done by* **Mr. ARJUN ASOK** *of seventh semester* ***DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING*** *towards the partial fulfillment for the award of the degree of* **Bachelor of Technology**

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COMPANY OVERVIEW

Alphasys 3D Printing Solutions is the 3D printing company on demand for the customer requirement to make manufacture fast, affordable and scalable products with high quality and low cost. Our company has set out to redefine product creativity for the customer and transform the conceptual idea into a 3D Model which tends to the production line. The raw materials for the products are recycled plastics, the primarily abs, later slowly hips, pc, etc While doing this, it helps to reduce environment pollution and tends to impact on the local market according to supplier request. The primary products are vases and pots frequently produce later going into different products. The company supports creators with design tools and services, access to advanced production technology starting with 3D printing, and services to build a business. There is a range of materials for product development to bring your idea into reality. Our service is accessible for the students(Engineering, Medical, etc) who wants to build prototype, Commercial and domestic application, either companies or small scale Industries and shop owners(Includes gift shop, toy shop, etc).

INTRODUCTION

The realm of electronics manufacturing is undergoing a profound transformation, with additive manufacturing emerging as a pivotal technology. This report elucidates the intricacies of quality control within this evolving landscape, emphasizing the critical role of component traceability, in-lab testing, and product inspection. The internship conducted at Alphasys 3D Printing Solutions, Muvattupuzha, provided firsthand insights into these essential aspects of quality assurance.

INTERNSHIP ACTIVITIES AND ACCOMPLISHMENTS

Internship Objectives:

- Gain practical experience in additive manufacturing processes, particularly in the context of electronics fabrication.
- Understand the intricacies of quality control protocols within additive

manufacturing workflows.

- Explore the applications of additive manufacturing in the production of electronic components and control systems.
- Contribute to ongoing projects and initiatives aimed at advancing additive manufacturing technologies.
- Quality Control Challenges in Electronics Manufacturing:

Global Competition and Cost Pressure:

Electronics manufacturers operate within a fiercely competitive environment, where cost efficiency often takes precedence over quality.

This relentless pursuit of lower costs can compromise product integrity and long-term viability.

Complex Supply Chain:

The modern electronics supply chain spans continents, with components sourced from diverse geographical regions.

This complexity exacerbates the challenge of ensuring traceability, as components traverse multiple stages of production and assembly.

High-Mix, Low-Volume Manufacturing:

The shift towards customized products necessitates agile manufacturing processes capable of accommodating a high mix of variants.

However, this agility introduces new hurdles in quality control, requiring meticulous attention to detail and rigorous testing protocols.

Role of Additive Manufacturing in Quality Control:

In-House Manufacturing Advantages:

Adopting additive manufacturing technologies empowers organizations to exert greater control over the production process.

By internalizing manufacturing capabilities, companies can implement stringent quality control measures tailored to their specific requirements.

Intellectual Property Protection:

In-house additive manufacturing safeguards sensitive intellectual property, shielding advanced designs from potential breaches.

This is particularly pertinent in industries characterized by stringent security protocols, such as defense and aerospace.

Design Flexibility:

Additive manufacturing liberates designers from the constraints imposed by traditional manufacturing methods.

Complex geometries, intricate interconnect architectures, and embedded components can be seamlessly integrated into electronic assemblies, fostering innovation and customization.

Immediate Inspection:

Additive manufacturing facilitates real-time quality assessment, enabling immediate inspection of finished products.

This expedites the identification of defects or anomalies, minimizing lead times and enhancing overall production efficiency.

Case Study: DragonFly LDM System by Nano Dimension:

The DragonFly LDM system epitomizes the convergence of additive manufacturing and electronics production. Its cutting-edge inkjet printing capabilities empower organizations to fabricate high-quality PCBs with unparalleled precision and efficiency. By leveraging the DragonFly LDM, companies can accelerate innovation, reduce time-to-market, and elevate the standard of quality control in electronic manufacturing.

CONCLUSION

In conclusion, additive manufacturing represents a paradigm shift in electronics manufacturing, offering a potent arsenal of tools to enhance quality control. Through meticulous attention to component traceability, in-lab testing, and product inspection, organizations can navigate the complexities of modern supply chains with confidence. As the industry continues to evolve, embracing additive manufacturing will be imperative for staying ahead of the curve and delivering superior electronic products to discerning consumers.

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This is to certify that Mr. Dhanush Puthalath (SNC18EC003), B.Tech (Electronics & Communication Engineering) Student of Sree Narayana Guru College of Engineering & Technology, Payyanur – 670 307 has done Internship at Keltron Component Complex Ltd, under our guidance from 23rd July 2019 to 30th July 2019.

The student has shown keen interest and initiative during the training.

HoD (Personnel & Admin.)

KELTRON COMPONENT COMPLEX LTD. KANNUR 670 562

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at

KELTRON COMPONENT COMPLEX LTD , KANNUR

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INTRODUCTION

An organization is a social arrangement which pursue collective goals, which controls its own performance, and which has a boundary separating it from its environment. Organization is the association formed by a group of people who worked individually or in groups to achieve common set of goals. Organizational studies are the study of individual and group dynamics in an organizational setting, as well as the nature of the organization themselves. Whenever people interact in an organization, many factors come to play. Organizational studies attempts to understand them and hence it is essential to anB.TECH as it helps them to connect theory with practice. As a part of the B.TECH an organizational study was conducted at "KELTRON LTD" to know about the functions of an entire organization and industrial training. The training and study was conducted for a period of 5 days. The aim of the study is to acquire practical knowledge of the application of management theories in the functioning of the organization and it also helps in understanding the organization structure and functions of various departments in the organization.

KELTRON COMPONENT COMPLEX LTD, KANNUR

Chapter1

INDUSTRY PROFILE

Electronics is one of the fastest expanding fields in research, application development and commercialization. Substantial growth in the field, has occurred due to World War II, the invention of the Transistor, the Space Program and now the computer industry. The research grants are high, jobs are available and there is much money to be made in areas related to electronics with the beginning of the "Information Superhighway" and Computerized Video coming to your home, it is hard to imagine that electronics will not continue to expand in future. Electronics is everywhere in our lives. India is the fifth largest economy in the World and has the largest GDP among emerging economics. Owing to its large population, the potential consumer demand is almost unlimited and consequently under appropriate condition, strong growth performance can be expected. In fact, the liberalization of the economy in 1991 has led to rapid growth. The electronics industry in particular is emerging as one of the most important industry in the Indian market. The electronic industry in India dates back to the early 1960s.Electronicss was initially restricted to the development and maintenance of the fundamental communication system including Radio Broadcasting, Telephonic and Telegraphic Communication and Augmentation of Defense Capabilities. Until 1984, the electronic sector was primarily Government owned.1980s witnessed a rapid growth of the electronic industry due to sweeping economic chances, resulting in the liberalization and Globalization of the country.

Chapter 2

COMPANY PROFILE

Keltron Ltd, Kerala State Electronics Development Corporation Limited, is a public sector Electronics Company located in Kerala, a state in India. It is headquartered at the capital city of Kerala, Thiruvananthapuram. The company is under the direct control of the State government of Kerala. KELTRON's history is a saga of innovation in electronics. From being a pioneer in 1973, to the role of a trend-setter today, Keltron has been the catalysis for the development of electronics industry in Gods own country-Kerala.

Within five years of its inception, Keltron had set up a production centre in every district of the State. More than 5,000 people were engaged directly or indirectly by Keltron for the manufacture of electronic goods. The model of a State-owned electronics corporation was so successful that several other States in India followed suit - launching their own Electronics Corporations. The registered name of the company is Kerala State Electronics Development Corporation Limited (KSEDC Ltd). The name Keltron was coined from two words, Kerala Electronics and when it was necessary to use a small word in Telegrams referring to the company. Later, the same naming convention was adopted to name two other State owned Electronic Companies namely Meltron (Maharashtra Electronics) and Upton (UP Electronics).

The company is located in the northern parts of the state of Kerala about 15 kms from Kannur town at Keltron Nagar, Kalliassseri with over 30 years of experience in the design and manufacture Aluminium Electrolytic Capacitors and a product range extending from Miniature Radial Type to Large Can Screw Terminal type Capacitors. The manufacturing technology is constantly upgraded to meet the emerging trends in the capacitor field for delivering premium quality products.

The manufacturing facility at KCCL integrates the state of the art sophisticated automatic machinery imported from Japan,Italy,Taiwan. It has the capacity to produce Ultra Miniature, Standard and High Reliability Radial Lead Type Capacitors, Axial Lead Type Capacitors, Snap-in Terminal type capacitors, Screw Terminal type Capacitors and AC Motor Start Capacitors. The R&D center of the company has the recognition of the department of Scientific & Industrial Research, Ministry of Science & Technology, Govt of India. KCCL is also a professional manufacturer of Low Voltage and High Voltage formed Aluminium Foils required for Aluminium Electrolytic Capacitors. This in-house forming plant supplies wide variety of formed foils required for the capacitor division

THE AMALGAMATION

In the year 2008-09 the company has undergone a transformation both structurally and functionally. The Government of Kerala sanctioned on 27-05-2008 the merger of four subsidiaries of Kerala State Electronics Development Co-operation Ltd (KSEDC) at kannur via, Keltron Resistors Ltd (KRL),Keltron Magnetic Ltd (KML),Keltron Crystals Ltd(KCL),and Keltron Component Complex Ltd(KCCL) into one company. The amalgamated company was to function under the name, Keltron Component Complex Ltd (KCCL) after the completion of the procedural formalities of merger, only amalgamated KCCL was in existence, while KML,KRL and KCL was dissolved without the process of winding up. The assets and liabilities were taken over by KCCL as a result of this amalgamation.The amalgamated Keltron Component Complex Ltd is a major indigenous manufacturer of Aluminium Electrolytic Capacitors, MPP capacitors carbon & Metal Film Resistors and Piezoelectric Quartz crystals. KCCL markets its products under the brand name "KELTRON" of its parent company. It has the state of the art manufacturing facility with sophisticated automatic machines from Japan and Europe. The company's quality system has been conferred with the ISO 9001 accreditation by KPMG.

Chapter 3
ORGANISATIONAL HISTORY

Today we live in a world where speed, flexibility, intellectual capital development and networks have become the basis for value creation. In this technology driven environment Keltron finds the assimilation adoption and integration of technology rather than investing it. Keltron has become the catalyst in marketing electronics in almost every aspect of our daily life. Since 1973 Keltron's strength lies in the stable foundation and experience built over the years its strong human capital, this nationwide network and its ability to adapt itself to change with over 30 year long track record as a manufacture or sophisticated electronics devices and system.

A strong infrastructure and manufacturing experience since its inception in 1973 Keltron forte has always been high quality manufacturing. During the past 30 years Keltron has churned out a whole range of electronic in products electro-mechanical and high precision modules and sub assemblies of different industry segment.Keltron entered the electronic components industry by setting the electronic components industry by setting up India's largest Aluminium Electrolyte Capacitor plant in technical collaboration with Sprague Electromagnet Belgium in 1976 at Kannur in Kerala.

Mission

The mission of Keltron is to transform itself to one of the Navaratna Corporations of the country. To achieve this mission the organization has set a clearly defined strategy in motion encompassing its core strengths experienced human resources robust infrastructure for high quality manufacture, committed to quality and continuous research and development.

Vision

• To emerge as a strong and self- reliant business enterprise with customer focus, profit orientation and professional outlook.

• To fit the company as Rs. 5 billion company with a net profit of 10% in sales.

• To build up Keltron as a model in the sunrise technology sector of electronics and IT.

• To function as a backbone of electronic industry in the state.

• To continue to play the role of a model agency of the Government for accelerating the growth of development of this core industry in this State.

PERSONNEL DEPARTMENT

Men, Materials and Machines are regarded as the three important factors of production. Among these factors human resource or men is important because, without human beings the other factors cannot perform well. Therefore, human beings constitute the Organization at all levels, and are regarded as the chief dynamic factor of production.
The management makes an effort to co-ordinate human and material resources in such a manner that organizational objectives are achieved. It is not very difficult to handle material resources, but without the efficient use of Human Resource Management, it can never accomplish the objectives of the business.

The Personnel Management can be defined as the Planning, Organizing, Directing and Controlling of the Procurement, Development, Compensation, integration and maintenance and separation of Human Resources to the end that individual, Organization and social objectives are accomplished. The Personnel Department aims at ensuring a steady source of Human Resource who can contribute to the successful enterprise. The department deals with the management of human resource. The very existence of an undertaking depends upon the competent, co-operative and dedicated performance of the personnel.

Personnel functions of the company consist of several Managerial and Operative Functions. The Managerial Functions are Planning, Organizing, Directing and Controlling of Human Beings. The Operative functions relate to ensuring right people for the right jobs at the right time. These functions include Procurement, Development, Compensation and Maintenance of employees.

Manpower Planning

For meeting the requirements of employees, management must decide beforehand as to what type of men is to be recruited and in what number they are required. The first problem is solved by Job Analysis and the second problem is tackled through Man Power Planning. Manpower Planning is the systematic and continuing process of analyzing organizations. Workforce requirements under changing conditions and developing personnel policies appropriate to the long term effectiveness of the organization. Therefore, a proper and systematic manpower program requires proper forecasting and planning for future. It should consider developing manpower requirements for the whole organization, to create and evaluate the manpower inventory and to develop required talents among the employees selected for promotions.

Recruitments And Placements

Recruitment is the process of searching for prospective employees andstimulating them to apply for jobs in the organization. Placement is the process of assigning the selected candidate with the most suitable jobs in terms of job requirements.As KCCL is a Government Company, recruitment of candidates is done through employment exchange. For executive posts the company approaches professional and employment exchange, Trivandrum and local employment exchanges.As and when a vacancy arises, Personnel and Administration Department notifies it to employment exchanges.

For executive posts the company approaches professional employment exchanges, Trivandrum local employment exchange. Then the personnel department publishes vacancies in leading newspapers. After receiving the applications from the candidates, the department goes for scrutinizing them. The company calls the selected candidates for interview. For this the company has a Selection Board, represented by concerned departmental head, a nominee of the Government of Kerala and the Personnel Manager. This board conducts interviews and selects suitable candidates. Then the company gives appointment order to the selected candidate along with terms and conditions for appointment. If the person is willing to abide by the terms and conditions he is directed to sign and return one of the copies of the order.

Training

Training is the act of increasing the knowledge and skill of an employee for doing a particular job. The purpose of training is to bring about improvement in the performance of work. It includes the learning of such techniques as are required for the better performance of work.

It includes the learning of such techniques as are required for the better performance of definite task.In KCCL, internal as well as external training is given to employees. Fresh hands will be selected as trainees for a period of one year. For existing employees, it is conducting refresher training by way of lectures, work educational classes, external training etc.

Chapter 4

INDUCTION OR ORIENTATION TRAINING

There are two phases of Induction training program. The first phase is generally conducted by the Personnel Department. It is concerned with giving the new employees friendly welcome, explaining the matters concerned with the Company's background, products, health and welfare plans etc. The Head of the Department under whom he has to work conducts the second phase of induction program. The employees are given information regarding production, work rules, working conditions.On first appointment, employees are initially given on- the-job training. Due to technological developments and improved techniques of management and production the training initially given will become out of date and arises the need to give new training. For this regional Worker's Training Education Center Officers come to KCCL. All the details regarding the training given to employees are recorded in KCCL for future reference. Details such as name of employees, date of birth, qualification, type of training, department in which he is working, joining date, training period etc are recorded.

Performance Appraisal

Performance appraisal is the systematic evaluation of an individual's performance in the job and his potential for development. Appraisal is the evaluation of work quality. It is the systematic and objective way of judging the relative work or ability of an employee in performing his job. Ordinarily the evaluation is done by immediate supervisors. So it is a technique used to know the work of an employee qualitatively and quantitatively on- the-job in comparison with other employees. It is one of the oldest and usual practices of management.

In KCCL at the end of training period the trainees are observed according to his performance during the training period. The Personnel Department provides performances forms for self appraisal, executive appraisal and annual performance appraisal. Self appraisal form is for self assessment of the employees. The other two are filled by the concerned department supervisors. Depending upon the performance of the trainee the personnel department decides whether the probation period is to be extended or not. On the basis of his performance during the probation period, the department then decides about the regular placements of the employee.

TIME KEEPING

Every employee is given a separate card with specific number having four digits. The workers, employees, supervisors or executive have different serial number. A master role is kept by the organization. Electronic punching system in KCCL is used to record the time of entry and exist of each employee. Maximum half an hour late is permitted to every employee. In the record half late coming is not allowed

Chapter 5

IMPLANT TRAINING

5.1 CAPACITORS

PRODUCTION OF ALUMINUM ELECTROLYTIC CAPACITORS

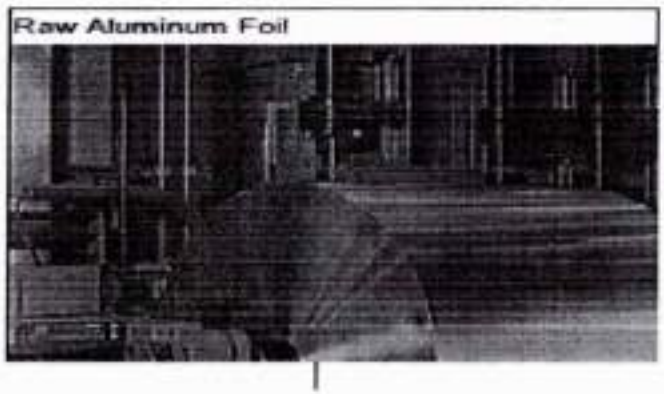


Fig 1: Raw material

(1) Etching

To obtain higher capacitance, surface area of aluminum foil for electrolytic capacitor increases through etching process. In etching process, aluminum foil is applied with DC or AC current in a chloride solution to preferentially dissolve the surface. Surface area is increased by 60-150 times for low voltage foils and 10-30 times for high voltage foils

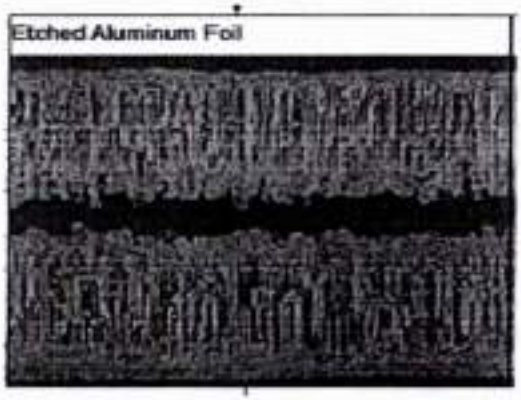


Fig 2: Etched al foil

(2) Anodization(Formation of Dielectric Layer)

Aluminum foil for electrolytic capacitor is further formed with anodic oxide film (Al2O3) on the surface as dielectric layer. Etched aluminum foil is immersed into a solution including ammonium salt of boric acid or phosphoric acid and applied with DC voltage so that the foil becomes positive and the solution becomes negative.Then aluminum oxide film is formed on the surface in proportion to the applied voltage. The anodic oxide film, having the thickness of 13-15 angstrom/V(1.3-1.5 nm/V), is extremely thin, compact and highly insulating.

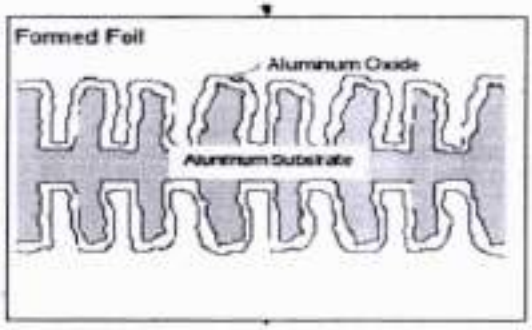


Fig 3: Anodization

(3) Slitting Process

Etching and Forming are processed with wide roll of master foil. Then the master roll is slitted into individual rolls with specified width as per thespecification

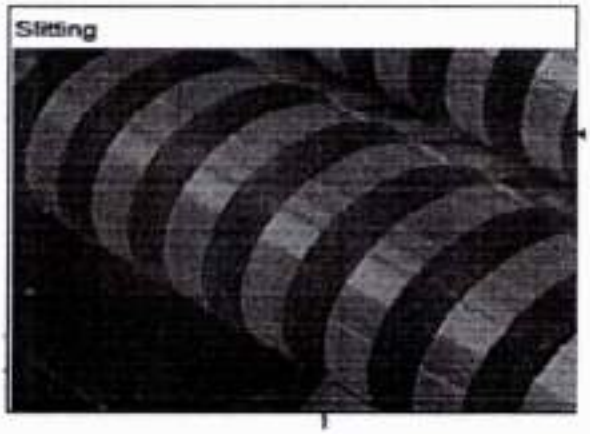


Fig 4: Slitting

(4) Stitching and Winding

Slit anode and cathode foils after slitting process are stitched with lead tabs and wound into cylindrical element together with spacer paper. Spacer paper is to contain liquid electrolyte that works as real cathode and restores damaged dielectric film, as well as maintaining the distance between anode and cathode foils constant to prevent short circuit.

Fig 5: Stitching and winding

(5) Impregnation

Wound element is immersed into electrolyte bath under either low air pressure condition or normal pressure to impregnate.Electrolyte contains one or more polyhydric alcohols such as ethylene glycol as the major solvents and oneor more ammonium salts as solutes to restore the damaged oxide film (dielectric) and significantly improve the performance and life of the capacitor.

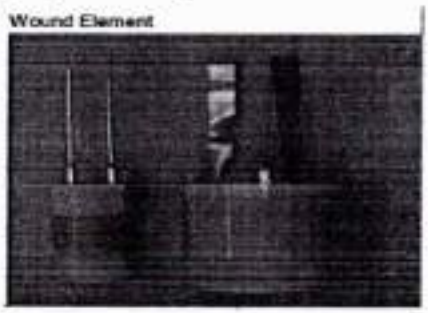


Fig 6: Impregnation

(6) Assembling

Rubber seal, rubber-lined terminal plate or molded terminal plate is attached to impregnated element.

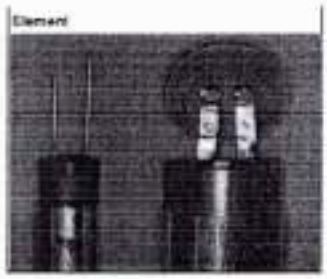


Fig 7: Assembling

(7) Encapsulation

Capacitor element is put into aluminum case and sealed together with rubber seal or terminal plate. Materials to seal up capacitor are EPT or IIR, which is selected depending on the capacitor series.

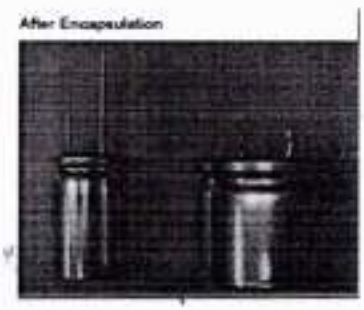


Fig 8: Encapsulation

(8) Sleeve

Sealed capacitor is covered with sleeve made of heat shrinkable PVC or PET. The purpose of sleeve is to indicate information of the capacitor. When electric insulation of inner element or aluminum case is required, proper materials shall be selected

(9) Aging (Reforming)

As described above, the oxide film as the dielectric is formed in Anodization (Forming) Process, but aluminum substrate is exposed during slitting process and stitching process. Oxide film layer is possibly damaged or cracked during winding. Restoringoxide film is necessary for capacitor to fully function.In this process, capacitors are applied with DC voltage in high temperature atmosphere to repair damagedoxide film. Aging makes leakage current of capacitor stable andalso debugs initial failure.

(10) Process Inspection & Packaging

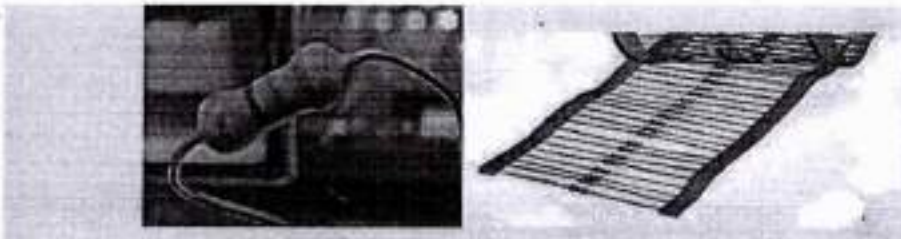
Capacitors finished with aging are packaged throughelectrical screening and appearance inspection.

(11) Outgoing Inspection

Outgoing inspection is conducted based on our ownsampling plan and criteria.

Fig 9: Capacitor complete product

5.2 RESISTORS



.Fig 10: Resisters

The tape is removed during assembly before the leads are formed and the part is inserted into the board. In automated assembly the leads are cut and formed. A resistor is a passive two-terminal electrical component that implements electrical resistance as a circuit element. Resistors act to reduce current flow, and, at the same time, act to lower voltage levels within circuits. In electronic circuits resistors are used to limit current flow, to adjust signal levels, bias active elements, terminate transmission lines among other uses. High-power resistors that can dissipate many watts of electrical power as heat may be used as part of motor controls, in power distribution systems, or as test loads for generators. Resistors can have fixed resistances that only change slightly with temperature, time or operating voltage. Variable resistors can be used to adjust circuit elements (such as a volume control or a lamp dimmer), or as sensing devices for heat, light, humidity, force, or chemical activity.

Resistors are common elements of electrical networks and electronic circuits and are ubiquitous in electronic equipment. Practical resistors as discrete components can be composed of various compounds and forms. Resistors are also implemented within integrated circuits. The electrical function of a resistor is specified by its resistance: common commercial resistors are manufactured over a range of more than nine orders of magnitude. The nominal value of the resistance will fall within a manufacturing tolerance.

OPERATION

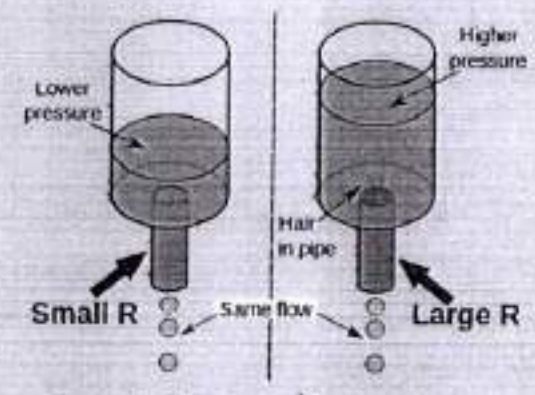


Fig 11: Resister operation

The hydraulic analogy compares electric current flowing through circuits to water flowing through pipes. When a pipe (left) is filled with hair (right), it takes a larger pressure to achieve the same flow of water. Pushing electric current through a large resistance is like pushing water through a pipe clogged with hair: It requires a larger push (voltage drop) to drive the same flow (electric current).

FIXED RESISTORS

A single in line (SIL) resistor package with 8 individual, 47 ohm resistors. One end of each resistor is connected to a separate pin and the other ends are all connected together to the remaining (common) pin – pin 1, at the end identified by the white dot.

Lead arrangements

Resistors with wire leads for through-hole mounting Through-hole components typically have leads leaving the body axially. Others have leads coming off their body radially instead of parallel to the resistor axis. Other components may be SMT (surface mount technology) while high power resistors may have one of their leads designed into the heat sink.

Carbon composition

Fig 12: Carbon composition Resisters

Three carbon composition resistors in a 1960s valve (vacuum tube) radioCarbon composition resistors consist of a solid cylindrical resistive element with embedded wire leads or metal end caps to which the lead wires are attached. The body of the resistor is protected with paint or plastic.

Early 20th-century carbon composition resistors had uninsulated bodies; the lead wires were wrapped around the ends of the resistance element rod and soldered. The completed resistor was painted for color-coding of its value. The resistive element is made from a mixture of finely ground (powdered) carbon and an insulating material (usually ceramic). A resin holds the mixture together. The resistance is determined by the ratio of the fill material (the powdered ceramic) to the carbon. Higher concentrations of carbon— a good conductor— result in lower resistance. Carbon composition resistors were commonly used in the 1960s and earlier, but are not so popular for general use now as other types have better specifications, such as tolerance, voltage dependence, and stress (carbon composition resistors will change value when stressed with over-voltages). Moreover, if internal moisture content (from exposure for some length of time to a humid environment) is significant, soldering heat will create a non-reversible change in resistance value. Carbon composition resistors have poor stability with time and were consequently factory sorted to, at best, only 5% tolerance. These resistors, however, if never subjected to overvoltage nor overheating were remarkably reliable considering the component's size.

Carbon composition resistors are still available, but comparatively quite costly. Values ranged from fractions of an ohm to 22 mega ohms. Due to their high price, these resistors are no longer used in most applications. However, they are used in power supplies and welding controls.

Carbon pile

A carbon pile resistor is made of a stack of carbon disks compressed between two metal contact plates. Adjusting the clamping pressure changes the resistance between the plates. These resistors are used when an adjustable load is required, for example in testing automotive batteries or radio transmitters. A carbon pile resistor can also be used as a speed control for small motors in household appliances (sewing machines, hand-held mixers) with ratings up to a few hundred watts.

Carbon film

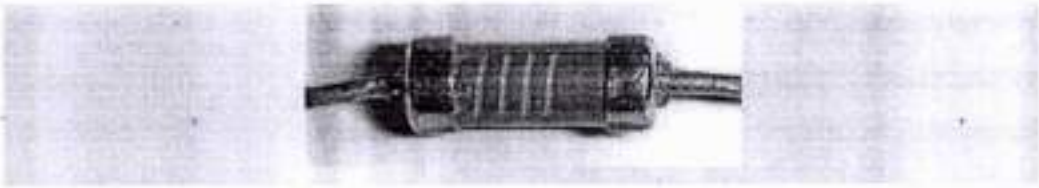


Fig 13: Carbon film resisters

Carbon film resistor with exposed carbon spiral (Tesla TR-212 1 kΩ) A carbon film is deposited on an insulating substrate, and a helix is cut in it to create a long, narrow resistive path. Varying shapes, coupled with the resistivity of amorphous carbon (ranging from 500 to 800 μΩ m), can provide a wide range of resistance values. Compared to carbon composition they feature low noise, because of the precise distribution of the pure graphite without binding. Carbon film resistors feature a power rating range of 0.125 W to 5 W at 70 °C. Resistances available range from 1 ohm to 10 mega ohm. The carbon film resistor has an operating temperature range of −55 °C to 155 °C. It has 200 to 600 volts maximum working voltage range. Special carbon film resistors are used in applications requiring high pulse stability.

PRODUCTION OF RESISTORS

RESISTANCE STANDARDS

The primary standard for resistance, the "mercury ohm" was initially defined in 1884 in as a column of mercury 106.3 cm long and 1 square millimeter in cross-section, at 0 degrees Celsius. Difficulties in precisely measuring the physical constants to replicate this standard result in variations of as much as 30 ppm. From 1900 the mercury ohm was replaced with a precision machined plate of manganin. Since 1990 the international resistance standard has been based on the quantized Hall effect discovered by Klaus von Klitzing, for which he won the Nobel Prize in Physics in 1985.Resistors of extremely high precision are manufactured for calibration and laboratory use. They may have four terminals, using one pair to carry an operating current and the other pair to measure the voltage drop.

It is important in small value resistors (100–0.0001 ohm) where lead resistance is significant or even comparable with respect to resistance standard value.

RESISTOR MARKING

Most axial resistors use a pattern of colored stripes to indicate resistance, which also indicate tolerance, and may also be extended to show temperature coefficient and reliability class. Cases are usually tan, brown, blue, or green, though other colors are occasionally found such as dark red or dark gray. The power rating is not usually marked and is deduced from the size.The color bands of the carbon resistors can be four, five or, six bands. The first two bands represent first two digits to measure their value in ohms. The third band of a four-banded resistor represents multiplier and the fourth band as tolerance. For five and six color-banded resistors, the third band is a third digit, fourth band multiplier and fifth is tolerance. The sixth band represents temperature co-efficient in a six-banded resistor.Surface-mount resistors are marked numerically, if they are big enough to permit marking; more-recent small sizes are impractical to mark.. A second color of paint was applied to one end of the element, and a color dot (or band) in the middle provided the third digit. The rule was "body, tip, dot", providing two significant digits for value and the decimal multiplier, in that sequence. Default tolerance was ±20%. Closer-tolerance resistors had silver (±10%) or gold-colored (±5%) paint on the other end.

Preferred values

A series might have 100, 125, 150, 200, 300, etc. Resistors as manufactured are subject to a certain percentage tolerance, and it makes sense to manufacture values that correlate with the tolerance, so that the actual value of a resistor overlaps slightly with its neighbors. Wider spacing leaves gaps; narrower spacing increases manufacturing and inventory costs to provide resistors that are more or less interchangeable.Resistors are manufactured in values from a few milliohms to about a gigaohm in IEC60063 ranges appropriate for their tolerance.

Manufacturers may sort resistors into tolerance-classes based on measurement. Accordingly a selection of 100 ohms resistors with a tolerance ±10% might not lie just around 100 ohm (but no more than 10% off) as one would expect (a bell-curve). But rather be in two groups – either between 5 to 10% too high or 5 to 10% too low (but not closer to 100 ohm than that) because any resistors the factory had measured as being less than 5% off would have been marked and sold as resistors with only ±5% tolerance or better. When designing a circuit, this may become a consideration.

FAILURE MODES

The failure rate of resistors in a properly designed circuit is low compared to other electronic components such as semiconductors and electrolytic capacitors. Damage to resistors most often occurs due to overheating when the average power delivered to it (as computed above) greatly exceeds its ability to dissipate heat (specified by the resistor's *power rating*). This may be due to a fault external to the circuit, but is frequently caused by the failure of another component (such as a transistor that shorts out) in the circuit connected to the resistor. Operating a resistor too close to its power rating can limit the resistor's lifespan or cause a change in its resistance over time which may or may not be noticeable. A safe design generally uses overrated resistors in power applications to avoid this danger. Low-power thin-film resistors can be damaged by long-term high-voltage stress, even below maximum specified voltage and below maximum power rating. This is often the case for the startup resistors feeding the SMPS integrated circuit.When overheated, carbon-film resistors may decrease or increase in resistance.Carbon film and composition resistors can fail (open circuit) if running close to their maximum dissipation. This is also possible but less likely with metal film and wirewound resistors. An alternative failure mode can be encountered where large value resistors are used (100's of kilohms and higher). Resistors are not only specified with a maximum power dissipation, but also for a maximum voltage drop. Exceeding this voltage will cause the resistor to degrade slowly reducing in resistance. The voltage dropped across large value resistors can be exceeded before the power dissipation reaches its limiting value.

Chapter 6

CONCLUSION

With the knowledge of new techniques in 'Electronics' we are able to make our life more comfortable. The "In Plant Training" at Keltron Component Complex Ltd , Kannur gave us an insight into the various processes involved in the manufacture of electronic components. It enabled us to have a better understanding of our theoretical knowledge and was truly informative.

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SREE NARAYANA GURU
COLLEGE OF ENGINEERING & TECHNOLOGY

(PROMOTED BY SREE BHAKTHI SAMVARDHINI YOGAM, KANNUR)
CHALAKKODE P.O., PAYYANUR, KANNUR–670307, KERALA

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

INTERNSHIP DETAILS
2019-2020

Sl.No	Name	Industry	Duration
1	Vipin P V	All India Radio FM, Kannur	5days 23/07/2019-27/07/2019
2	Sudeep K S	All India Radio FM, Kannur	5days 23/07/2019-27/07/2019
3	NavyaBhaskaran	All India Radio FM, Kannur	5days 23/07/2019-27/07/2019
4	K P Anupriya	All India Radio FM, Kannur	5days 23/07/2019-27/07/2019
5	Naveena M	All India Radio FM, Kannur	5days 23/07/2019-27/07/2019
6	Harsha Shankar	All India Radio FM, Kannur	5days 23/07/2019-27/07/2019
7	Athena Anil	All India Radio FM, Kannur	5days 23/07/2019-27/07/2019
8	Athulya K C	All India Radio FM, Kannur	5days 23/07/2019-27/07/2019
9	Aswathi K	All India Radio FM, Kannur	5days 23/07/2019-27/07/2019
10	AryasreeVijayraj	All India Radio FM, Kannur	5days 23/07/2019-27/07/2019
11	AnjaluBabu K	All India Radio FM, Kannur	5days 23/07/2019-27/07/2019
12	Anagha P	All India Radio FM, Kannur	5days 23/07/2019-

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			27/07/2019
13	Afeefa K	All India Radio FM, Kannur	5days 23/07/2019-27/07/2019
14	Gopika Raj Nambiar	All India Radio FM, Kannur	5days 23/07/2019-27/07/2019
15	Aswathi M V	All India Radio FM, Kannur	5days 23/07/2019-27/07/2019
16	AshnaShiburaj	All India Radio FM, Kannur	5days 23/07/2019-27/07/2019
17	Anjana P M	All India Radio FM, Kannur	5days 23/07/2019-27/07/2019
18	Arya A	All India Radio FM, Kannur	5days 23/07/2019-27/07/2019
19	Karthika T	All India Radio FM, Kannur	5days 23/07/2019-27/07/2019
20	VismayaManoharan	All India Radio FM, Kannur	5days 23/07/2019-27/07/2019
21	T P MalavikaSajeev	All India Radio FM, Kannur	5days 23/07/2019-27/07/2019
22	Shreyalakshmi M	All India Radio FM, Kannur	5days 23/07/2019-27/07/2019
21	AparnaSajikumar	Keltron Component Complex Ltd., Kannur	5days 23/07/2019-27/07/2019
22	AswathiAsokan	Keltron Component Complex Ltd., Kannur	5days 23/07/2019-27/07/2019
23	DhanushPuthalath	Keltron Component Complex Ltd., Kannur	5days 23/07/2019-27/07/2019
24	Hrithika K V	Keltron Component Complex Ltd., Kannur	5days 23/07/2019-27/07/2019
25	Mabitha C	Keltron Component Complex Ltd., Kannur	5days 23/07/2019-27/07/2019
26	Remna P	Keltron Component Complex Ltd., Kannur	5days 23/07/2019-27/07/2019

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27	SnehaSurendran N	Keltron Component Complex Ltd., Kannur	5days 23/07/2019-27/07/2019

HOD (ECE)

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सत्यमेव जयते

प्रसार भारती
PRASAR BHARATHI
(भारत का लोक सेवा प्रसारक)
(INDIA'S PUBLIC SERVICE BROADCASTER)
आकाशवाणी : कण्णूर
ALL INDIA RADIO : KANNUR

दिनांक / Date: 27/07/2019

प्रमाण पत्र / CERTIFICATE

प्रमाणित किया जता है कि श्री विपिन. पी. वी, 6 वें सेमेस्टर इलेक्ट्रॉनिक्स और संचार इंजीनियरिंग पाठ्यक्रम छात्र, श्री नारायना गुरु कॉल्लेज ओफ इंजीनियरिंग एवं प्रौद्योगिकी, चालाक्कोड पोस्ट, पय्यन्नूर-670307, कण्णूर जिल्ला, 23/07/2019 से 5 दिनों के लिए एफ. एम. ट्रांसमीटर और आकाशवाणी कण्णूर के स्टूडियो में इंटर्नशिप प्रशिक्षण कार्यक्रम किया है / This is to certify that **Mr Vipin. P. V**, 6th Semester Electronics & Communication Engineering student of Sree Narayana Guru College of Engineering and Technology, P.O. Chalakkode, Payyanur, Kannur District, Kerala-670307 has undergone Internship Training Programme at **F. M. Transmitter and Studios of AIR, Kannur for 5 days from 23/07/2019.**

उनका प्रदर्शन बहुत अच्छा था /His performance was Very Good.

ALL INDIA RADIO KANNUR-670 004 PRASAR BHARATHI PUBLIC SERVICE BROADCASTER

(शिवप्रकाश. के. सी. / **Sivaprakash. K. C.**)
(सहायक निदेशक (अभी.) / Assistant Director (E) /
कार्यालय प्रमुख / Head of Office

PALLIKKUNNU P.O.KERALA - 670 004. Email DD(E): se_airkannur@rediffmail.com email DD(P): aiir.knr@gmail.com
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SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

Industrial Training

At

All India Radio Kannur

Submitted in partial fulfilment for the award of the degree of

Bachelor of Technology

Of

APJ Abdul Kalam Technological University

Submitted by

Mr. VIPIN P V

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

2019

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PAYYANUR, KANNUR

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

BONAFIDE CERTIFICATE

*This is to certify that Industrial Training at "***All India Radio , Kannur"** *is a bonafide record of the work done by* **Mr. VIPIN P V** *of seventh semester* ***DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING*** *towards the partial fulfillment for the award of the degree of* **Bachelor of Technology** *by APJ Abdul Kalam Technological University*

Faculty Advisor

Department of ECE

Dr. LEENA A V
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PAYYANUR, KANNUR

HOD (ECE)

Head of the Department

Department of ECE

CHAPTER 1

INTRODUCTION

Radio Broadcasting was pioneered in India by the Madras Presidency Club Radioin 1924. The Club worked a broadcasting service for three years, but owing to financial difficulties gave it up in 1927. In the same year (1927) some enterprising businessmen in Bombay started the Indian Broadcasting Company with stations at Bombay and Calcutta. This company failed in 1930, in 1932 the Government of India took over broadcasting. A separate department known as Indian Broadcasting Service was opened. The Service was later designated 'All India Radio' (AIR) and was placed under a separate Ministry-the Ministry of Information and Broadcasting. The AIR is controlled by a Director General, who is assisted by several Deputy Directors and a Chief Engineer.

Broadcasting, in its significance, reach and impact, constitutes the most powerful medium of mass communication in India. Its importance, as a medium of information andeducation is particularly great in a vast and developing country like India where the reach of the printed word is not very wide or deep. While the total circulation of all the newspapers in India, including both English and Indian language papers, is around 8 million, there are, according to a recent estimate, nearly 400 million (out of a total population of 625 million) potential listeners to All India Radio. Broadcasting in India isa national service, developed and operated by the Government of India. All India Radio (also known as Akashvani) operates this service, over a network of broadcasting stations located ail over the country.

As a national service, catering to the complex needs of a vast country. All India Radio seeks to represent in its national and regional programmes, the attitudes,

aspirations and attainments of all Indian people and attempts to reflect, as fully and faithfully as possible, the richness of the Indian scene and the reach of the Indian mind. As a national service, catering to the complex needs of a vast country. All India Radio seeks to represent in its national and regional programmes, the attitudes, aspirations and attainments of all Indian people and attempts to reflect, as fully and faithfully as possible, the richness of the Indian scene and the reach of the Indian mind.

CHAPTER 2

ORGANISATION HISTORY

"Akashvani" is an alternative name for All India Radio (AIR), India's national public radio broadcaster. The term "Akashvani" originates from Sanskrit, where "Akash" means "sky" or "ether," and "Vani" means "voice" or "message." Together, "Akashvani" translates to "voice from the sky" or "message from the heavens."

All India Radio, commonly referred to as Akashvani, plays a pivotal role in disseminating news, information, cultural content, and entertainment programs across the diverse linguistic and cultural landscape of India. Established in 1930 as the Indian State Broadcasting Service under the Indian Broadcasting Company, it later came under the control of the Government of India in 1936 and was renamed All India Radio.

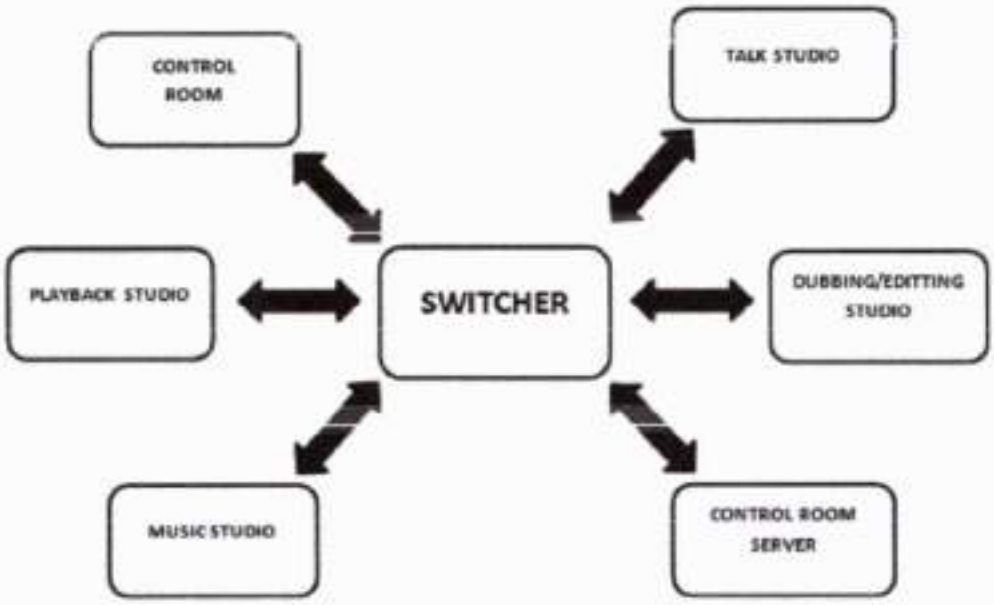
Akashvani operates a vast network of radio stations throughout the country, broadcasting in numerous languages and dialects to cater to the diverse needs of India's populace. It serves as a vital medium for communication, education, entertainment, and cultural preservation, reaching millions of listeners across urban and rural areas alike.

The name "Akashvani" embodies the essence of radio broadcasting, symbolizing the transmission of voices and messages through the airwaves. It reflects the significance of radio as a medium that transcends physical boundaries, connecting people across vast distances and bringing them together through the power of sound and storytelling. In essence, Akashvani and All India Radio are synonymous, representing India's premier radio broadcasting service dedicated to

serving the public interest and fostering unity among the country's diverse communities.

CHAPTER 3

BLOCK DIAGRAM OF STUDIO



CONTROL ROOM STUDIO CONSOLE:

The Studio console is the major equipment used in the STUDIO CONTROL ROOM. It is with the help of this device the different programs that are produced and those that are received from other stations routed to air. The various inputs to the console are the programs from various studios, the programs that are received using a C BAND receiver which is broadcasted from Delhi and the programs that are

received via an ISDN link. The Outputs from the console is taken through two master amplifiers among which one is active at a time. This output is directed to the

STUDIO TRANSMITTER LINK (STL).AIR is having

For quality transmission of the programs, STL is realized using four methods.

They are:

1. A microwave link.
2. FM transmitter link.
3. ISDN link.
4. Optical fibre cables.

I. MICROWAVE

Radio and television broadcast companies originate their signals in studios, but must get them to the transmitter site. In many cities, a nearby hill or mountain holds most of the transmitters. A microwave studio transmitter link (STL) delivers the signal without wires. Positioned at a fixed location and using radio waves, a microwave transmitter sends those waves across space to be received by a microwave receiver at

another fixed location. Microwave is broadband, so it can transmit a substantial amount of information from point to point, for use in cell phone and wireless Internet service, with no need for any other equipment between the two fixed locations.

II. Integrated Services Digital Network (ISDN)

Integrated Services Digital Network (ISDN) is a set of communication standards for simultaneous digital transmission of voice, video, data, and other network services over the traditional circuits of the public switched telephone network. It was first defined in 1988 in the CCITT red book. Prior to ISDN, the telephone system was viewed as a way to transport voice, with some special services available for data. The key feature of ISDN is that it integrates speech and data on the same lines, adding features that were not available in the classic telephone system. For AIR, The ISDN link is facilitated by the BSNL. Air is making use of BROADBAND ISDN. In addition to an STL system ISDN acts as a channel for live broadcasting of AIR programs.

SALIENT FEATURES OF ISDN:

- ISDN is a fast network
- ISDN is a telephone network/digital network.
- Integrated services

III. ANTENNAS

Antenna is usually a metallic device (a rod or a wire) used for radiating or receiving electromagnetic waves. The radio frequency power developed in the final stage of a transmitter is delivered through cables/feeders, without themselves consuming any

power to the transmitting antenna. The RF energy gets converted into electromagnetic waves and travels in the free space at the speed of light. The receiving antenna picks up the radio waves and delivers useful signal at the input of a receiver for reception of signals. The transmitting and receiving antennae are reciprocal in the sense, any characteristics of the antenna in general applies equally to both.Antennas play a vital role in AIR also since these are the communication links between the various stations and the transmitter complex as well. As the purpose differ the shape, size and specifications varies in case of Antennas. In an AIR station we can see a wide variety of Antenna systems. These include:

1. A C-band receiver antenna with a dish whose diameter is about 5m. This antenna receives signals from other stations like Delhi.

2. A DTH receiver antenna with a dish whose diameter is about 1m. This antenna receives signals from stations like Calicut and Thiruvananthapuram

3. Yagi antennas are mounted on the top of a mast of height around 45 m. This is the transmitter antenna for the microwave studio transmitter link. And a similar receiver antenna is mounted on a mast of

4. height about 50m. This enables the line of sight communication between the studio and the transmitter.

CHAPTER 5

CONCLUSION

Broadcasting, in its significance, reach and impact, constitutes the most powerful medium of mass communication. In India, All India Radio operates this service, over a network of broadcasting stations located over the country. Currently there are two complexes in AIR Churchgate, Studio cum office complex and the earth station. In studio complex, there are three studios, MUSIC, TALK and the PLAYBACK. The first two together called to be the recording studio facilitates sound recording and mixing whereas the latter helps in coordinating the programs, Announcements and advertisements.

Reflector antenna

Microwave link

The Studio console is the major equipment used in the STUDIO CONTROL ROOM. The various inputs to the console are the programs from various studios, the programs that are received using a C BAND receiver which is broadcasted from Delhi and the programs that are received via an ISDN link. The Outputs from the console is taken through two master amplifiers among which one is active at a time. This output is directed to the STUDIO TRANSMITTER LINK (STL). This further route the programs to TRANSMITTER at. The source to the transmitter complex is also realized using Microwave, FM Transmitter, ISDN or Optical Fiber Cables.

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

INTERNSHIP DETAILS
2018-2019

Sl.No	Name	Industry	Duration
1.	AdarshPrakash	AlisonsInfomatics	5days 24/07/2018-28/07/2018
2.	Akshay P	All India Radio FM, Kannur	5days 10/07/2018-14/07/2018
3.	AswathiSreekanth	All India Radio FM, Kannur	5days 10/07/2018-14/07/2018
4.	Gopika C	All India Radio FM, Kannur	5days 10/07/2018-14/07/2018
5.	Harshitha T V	All India Radio FM, Kannur	5days 10/07/2018-14/07/2018
6.	Jinsha T K	All India Radio FM, Kannur	5days 10/07/2018-14/07/2018
7.	Rithin Ramesh	All India Radio FM, Kannur	5days 10/07/2018-14/07/2018
8.	SheonaSathish	All India Radio FM, Kannur	5days 10/07/2018-14/07/2018
		Embedded Systems Programming using AVR Microcontroller Arduino& Raspberry Pi	Two weeks
9.	Sruthi T K	All India Radio FM, Kannur	5days 10/07/2018-14/07/2018
10.	ShabnaMelathBabu	All India Radio FM, Kannur	5days 10/07/2018-14/07/2018

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Sl.No	Name	Industry	Duration
11.	Afeefa K	Embedded C/C++	25/07/2018-31/07/2018
12.	Anagha P	Embedded C/C++	25/07/2018-31/07/2018
13.	Anjali Babu K	Embedded C/C++	25/07/2018-31/07/2018
14.	AryasreeVijayaraj D	Embedded C/C++	25/07/2018-31/07/2018
15.	Aswathi K T	Embedded C/C++	25/07/2018-31/07/2018
16.	Athena Anil	Embedded C/C++	25/07/2018-31/07/2018
17.	Athulya K C	Embedded C/C++	25/07/2018-31/07/2018
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22.	Vipin P V	Embedded C/C++	25/07/2018-31/07/2018
23.	VismithaPramod	Embedded C/C++	25/07/2018-31/07/2018
24.	SreeHari		
25.	Naveena M	Embedded C/C++	25/07/2018-31/07/2018

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प्रगत संगणन विकास केंद्र
CENTRE FOR DEVELOPMENT OF ADVANCED COMPUTING
भारत सरकार, इलेक्ट्रॉनिक्स और सूचना प्रौद्योगिकी मंत्रालय का आर एवं डी संगठन
R&D Organization of the Ministry of Electronics and Information Technology, Government of India

सी डैक
CDAC

ISO 9001:2008 Certified

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Thiruvananthapuram 695 033, India
www.cdac.in

KRC/ITP/29743

CERTIFICATE

Certified that **Ms. Sheona Sathish,** student of **Sree Narayana Guru College of Engineering And Technology, Payyanur, Kerala** has successfully completed *Two weeks* Industrial Training Programme on **"Embedded Systems Programming using AVR Microcontroller, Arduino & Raspberry PI"** offered by CDAC, Thiruvananthapuram. This training programme was undertaken by her as part of B.Tech curriculum.

Thiruvananthapuram
27/07/2018

BALAN C
Head (Training)
Knowledge Resource Centre
(Erstwhile STDC)

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Submitted by

SHEONA SATHISH

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

2018

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PAYYANUR, KANNUR

ACKNOWLEDGMENT

I would like to express my sincerest gratitude to the Centre for Development of Advanced Computing (CDAC), Thiruvananthapuram, for providing me with the opportunity to undertake a two-week internship focused on "Embedded Systems Programming using AVR Microcontroller, Arduino, and Raspberry Pi." This internship has been a transformative journey of learning and growth, and I am truly grateful for the invaluable experiences and insights gained during this time.

I extend my heartfelt thanks to Ms. Mabitha M B and the entire team at CDAC for their unwavering support, guidance, and encouragement throughout my internship. Their expertise, mentorship, and constructive feedback have been instrumental in shaping my understanding of embedded systems programming and enhancing my technical skills. I am deeply appreciative of their dedication and commitment to nurturing the next generation of engineers and innovators.

I am also grateful to my college for facilitating this internship opportunity and for equipping me with the foundational knowledge and skills to excel in the field of Electronics and Communication Engineering. The invaluable lessons learned during this internship will undoubtedly contribute to my academic and professional development in profound ways.

Furthermore, I would like to thank my family and friends for their unwavering support and encouragement throughout this journey. Their belief in my abilities and constant encouragement have been a source of inspiration and motivation.

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INTRODUCTION

Company overview

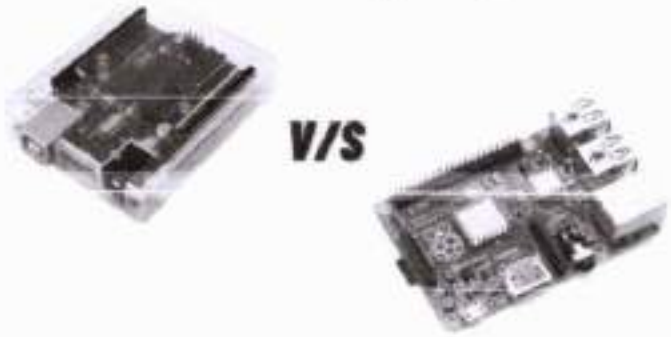
The Centre for Development of Advanced Computing (CDAC) is a premier research and development organization under the Ministry of Electronics and Information Technology (MeitY), Government of India. Established in 1988, CDAC focuses on the design, development, and deployment of advanced computing technologies and solutions to address the evolving needs of various sectors, including academia, government, and industry. CDAC is renowned for its expertise in several areas, including high-performance computing, cybersecurity, software engineering, embedded systems, and electronics design. The organization has played a pivotal role in advancing India's capabilities in Information Technology and has contributed significantly to the nation's digital transformation.For students in the field of Electronics and Communication Engineering (ECE), CDAC offers valuable opportunities for hands-on training, research, and collaboration in emerging technologies such as Embedded Systems Programming. Through its various training programs, workshops, and internships, CDAC provides students with the necessary skills and knowledge to excel in their chosen field.

The relevance of CDAC to the field of ECE lies in its focus on cutting-edge technologies such as microcontrollers, embedded systems, and hardware-software co-design. These areas are integral to the curriculum of ECE programs and are increasingly important in the development of innovative solutions for various applications, including Internet of Things (IoT), automation, robotics, and smart devices.

By offering internships and training programs in Embedded Systems Programming using platforms like AVR Microcontroller, Arduino, and Raspberry Pi, CDAC empowers students to gain practical experience and expertise in this specialized domain. Such experiences not only enhance their academic learning but also prepare them for successful careers in industries where embedded systems play a crucial role.

Overall, CDAC serves as a dynamic hub for research, innovation, and skill development in advanced computing technologies, making it an invaluable resource for students and professionals in the field of Electronics and Communication Engineering.

Arduino vs Raspberry Pi



Tools, Software, and Hardware:

- Development Environments: Interns utilized integrated development environments (IDEs) such as Arduino IDE for programming AVR Microcontrollers and Arduino boards, as well as Raspberry Pi OS for Raspberry Pi development.
- Programming Languages: C/C++ programming languages were predominantly used for programming AVR Microcontrollers and Arduino, while Python was commonly used for Raspberry Pi development.
- Hardware Components: Interns worked with a variety of hardware components, including AVR Microcontrollers (such as ATmega series), Arduino boards (such as Arduino Uno), Raspberry Pi boards, sensors, actuators, and peripheral modules.
- Testing Equipment: Test equipment such as multimeters, oscilloscopes, and logic analyzers were available for debugging and troubleshooting purposes.
- By employing these methodologies, training approaches, and utilizing appropriate tools, software, and hardware, CDAC ensured that interns gained comprehensive knowledge and practical experience in Embedded Systems Programming using AVR Microcontroller, Arduino, and Raspberry Pi, thereby enhancing their skills and preparing them for future endeavors in the field.

METHODOLOGY

Methodologies and Techniques:

- Hands-on Learning: The internship emphasized hands-on learning experiences, allowing interns to actively engage with hardware components and programming environments.
- Project-Based Approach: Interns were assigned practical projects to apply theoretical concepts and develop real-world solutions using AVR Microcontroller, Arduino, and Raspberry Pi.
- Mentorship: Experienced professionals from CDAC provided mentorship and guidance to interns, offering assistance and feedback throughout the internship period.
- Workshops and Training Sessions: CDAC conducted workshops and training sessions covering various topics related to Embedded Systems Programming, including basic concepts, programming languages, and project development methodologies.

Training and Supervision:

- Orientation: At the beginning of the internship, interns underwent an orientation program to familiarize themselves with CDAC's facilities, policies, and safety protocols.
- Training Modules: Interns received structured training modules on Embedded Systems Programming, tailored to their level of expertise and learning objectives.
- Hands-on Exercises: Practical exercises were provided to reinforce theoretical knowledge and develop proficiency in programming and hardware interfacing.
- Individual and Group Supervision: Interns were supervised both individually and in groups by experienced mentors who provided guidance, answered queries, and monitored progress.
- Code Reviews: Regular code reviews were conducted to evaluate interns' programming skills and provide constructive feedback for improvement.

CONCLUSION

My two-week internship at the Centre for Development of Advanced Computing (CDAC), Thiruvananthapuram, focusing on "Embedded Systems Programming using AVR Microcontroller, Arduino, and Raspberry Pi," has been an enriching and transformative experience. Over the course of my internship, I had the opportunity to delve deep into the realm of embedded systems and acquire practical skills that will undoubtedly shape my future endeavors in the field of Electronics and Communication Engineering.

Reflection on Learning:

The internship provided me with a unique platform to bridge the gap between theoretical knowledge and practical application. Through hands-on projects and immersive training sessions, I gained a comprehensive understanding of embedded systems programming and its diverse applications across various domains. From designing smart home automation systems to developing traffic light controllers, each project challenged me to think critically, problem-solve creatively, and apply my technical knowledge in real-world scenarios.

Acquisition of Skills:

The internship significantly enhanced my technical proficiency in programming languages such as C/C++ for AVR Microcontroller and Arduino, and Python for Raspberry Pi development. I honed my skills in hardware interfacing, mastering the intricacies of connecting sensors, actuators, and peripheral modules to microcontroller boards. Moreover, I developed a keen eye for debugging, learning to troubleshoot hardware and software issues with precision and efficiency.

Personal Growth and Achievements:

Throughout the internship, I pushed the boundaries of my comfort zone and embraced new challenges with enthusiasm and determination. I am proud of the projects I completed, from conceptualization to execution, and the positive feedback received from mentors and supervisors reaffirms my capabilities and potential in the field. My ability to adapt to unfamiliar environments, collaborate effectively with peers, and overcome obstacles with resilience has undoubtedly been strengthened through this experience.

Gratitude and Acknowledgment:

I am deeply grateful to the entire team at CDAC, Thiruvananthapuram, for their unwavering support, guidance, and encouragement throughout my internship journey. Special thanks to my mentors and supervisors for their invaluable insights, mentorship, and constructive feedback, which have played a pivotal role in shaping my learning and professional growth. I am also thankful to my college for facilitating this internship opportunity and equipping me with the foundational knowledge and skills to excel in the field.

Future Endeavors:

As I embark on the next phase of my academic and professional journey, I carry with me the invaluable lessons and experiences gained during my internship at CDAC. Armed with newfound skills, confidence, and a passion for embedded systems programming, I am eager to explore new horizons, tackle complex challenges, and contribute meaningfully to the advancement of technology. With a firm foundation laid during this internship, I am optimistic about the opportunities that lie ahead and committed to making a positive impact in the field of Electronics and Communication Engineering.

In conclusion, my internship at CDAC, Thiruvananthapuram, has been a transformative learning experience, paving the way for a promising future filled with growth, innovation, and endless possibilities. I am grateful for the support, guidance, and opportunities afforded to me, and I look forward to embarking on this exciting journey with passion, dedication, and determination.

Dr. LEENA A V
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PAYYANUR, KANNUR

प्रसार भारती
PRASAR BHARATHI
(भारत का लोक सेवा प्रसारक)
(INDIA'S PUBLIC SERVICE BROADCASTER)
आकाशवाणी : कण्णूर
ALL INDIA RADIO : KANNUR

सत्यमेव जयते

दिनांक Date: 16.7.2018

प्रमाण पत्र / CERTIFICATE

*This is to certify that **Ms Aswathi Sreekanth**, 6th Sem. B.Tech (Electronics and Communication Engineering) course student of Sree Narayana Guru College of Engineering & Technology, P.O. Chalakode, Payyanur-670307, Kannur District has undergone in-plant training at **FM Transmitter and Studios of A. I. R, Kannur** for 5 days from 10.7.2018.*

Her performance was good.

(सी.वी. प्रेमराजन / C.V. Premarajan)
अभियांत्रिक प्रमुख / Engineering Head

LEENA A. V.
PRINCIPAL
GURU
ENGINEERING & TECHNOLOGY,
KANNUR

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

Industrial Training

At

All India Radio Kannur

Submitted in partial fulfilment for the award of the degree of

Bachelor of Technology

Of

APJ Abdul Kalam Technological University

Submitted by

Ms. ASWATHI SREEKANTH

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

2018

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PAYYANUR, KANNUR

ACKNOWLEDGEMENT

I would like to express my deepest gratitude to 'All India Radio, Kannur' for providing me with the opportunity to undergo an enriching internship experience. It has been an invaluable journey of learning and growth.

I am sincerely thankful to Ms. Leena Narayanan , Assistant Professor ,Department of ECE, for their guidance, support, and encouragement throughout my internship. Their expertise and insights have been instrumental in shaping my understanding of the broadcasting industry and honing my skills in the field of Electronics and Communication Engineering.

I am also grateful to the entire team at All India Radio Kannur for their warm welcome and for providing me with a conducive environment to gain hands-on experience in various aspects of radio broadcasting.

Furthermore, I extend my heartfelt thanks to my college Sree Narayana Guru College Of Engineering & Technology, for facilitating this internship opportunity and for their continuous support in my academic and professional endeavors.

Lastly, I would like to express my appreciation to my family and friends for their unwavering encouragement and belief in my abilities.

Thank you to everyone who has contributed to making this internship a rewarding and memorable experience.

Aswathi Sreekanth

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CHAPTER 1

INTRODUCTION

Radio Broadcasting was pioneered in India by the Madras Presidency Club Radio in 1924. The Club worked a broadcasting service for three years, but owing to financial difficulties gave it up in 1927. In the same year (1927) some enterprising businessmen in Bombay started the Indian Broadcasting Company with stations at Bombay and Calcutta. This company failed in 1930, in 1932 the Government of India took over broadcasting. A separate department known as Indian Broadcasting Service was opened. The Service was later designated 'All India Radio' (AIR) and was placed under a separate Ministry the Ministry of Information and Broadcasting. The AIR is controlled by a Director General, who is assisted by several Deputy Directors and a Chief Engineer.

Broadcasting, in its significance, reach and impact, constitutes the most powerful medium of mass communication in India. Its importance, as a medium of information and education is particularly great in a vast and developing country like India where the reach of the printed word is not very wide or deep. While the total circulation of all the newspapers in India, including both English and Indian language papers, is around 8 million, there are, according to a recent estimate, nearly 400 million (out of a total population of 625 million) potential listeners to All India Radio. Broadcasting in India is a national service, developed and operated by the Government of India. All India Radio (also known as Akashvani) operates this service, over a network of broadcasting stations located ail over the country.

As a national service, catering to the complex needs of a vast country. All India Radio seeks to represent in its national and regional programmes, the attitudes, aspirations and attainments of all Indian people and attempts to reflect, as fully and faithfully as possible, the richness of the Indian scene and the reach of the Indian mind. As a national service, catering to the

complex needs of a vast country. All India Radio seeks to represent in its national and regional programmes, the attitudes, aspirations and attainments of all Indian people and attempts to reflect, as fully and faithfully as possible, the richness of the Indian scene and the reach of the Indian mind.

CHAPTER 2

ORGANISATION HISTORY

"Akashvani" is an alternative name for All India Radio (AIR), India's national public radio broadcaster. The term "Akashvani" originates from Sanskrit, where "Akash" means "sky" or "ether," and "Vani" means "voice" or "message." Together, "Akashvani" translates to "voice from the sky" or "message from the heavens."

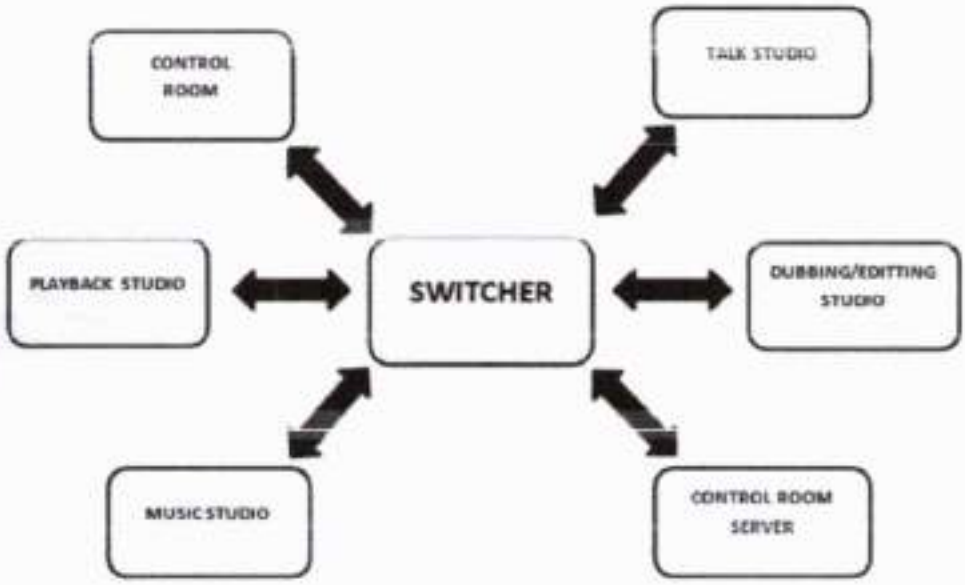
All India Radio, commonly referred to as Akashvani, plays a pivotal role in disseminating news, information, cultural content, and entertainment programs across the diverse linguistic and cultural landscape of India. Established in 1930 as the Indian State Broadcasting Service under the Indian Broadcasting Company, it later came under the control of the Government of India in 1936 and was renamed All India Radio.

Akashvani operates a vast network of radio stations throughout the country, broadcasting in numerous languages and dialects to cater to the diverse needs of India's populace. It serves as a vital medium for communication, education, entertainment, and cultural preservation, reaching millions of listeners across urban and rural areas alike.

The name "Akashvani" embodies the essence of radio broadcasting, symbolizing the transmission of voices and messages through the airwaves. It reflects the significance of radio as a medium that transcends physical boundaries, connecting people across vast distances and bringing them together through the power of sound and storytelling. In essence, Akashvani and All India Radio are synonymous, representing India's premier radio broadcasting service dedicated to serving the public interest and fostering unity among the country's diverse communities.

CHAPTER 3

BLOCK DIAGRAM OF STUDIO



CONTROL ROOM STUDIO CONSOLE:

The Studio console is the major equipment used in the STUDIO CONTROL ROOM. It is with the help of this device the different programs that are produced and those that are received from other stations routed to air. The various inputs to the console are the programs from various studios, the programs that are received using a C BAND receiver which is broadcasted from Delhi and the programs that are received via an ISDN link. The Outputs from

the console is taken through two master amplifiers among which one is active at a time. This output is directed to the

STUDIO TRANSMITTER LINK (STL).AIR is having

For quality transmission of the programs, STL is realized using four methods.

They are:

1. A microwave link.
2. FM transmitter link.
3. ISDN link.
4. Optical fibre cables.

I. MICROWAVE

Radio and television broadcast companies originate their signals in studios, but must get them to the transmitter site. In many cities, a nearby hill or mountain holds most of the transmitters. A microwave studio transmitter link (STL) delivers the signal without wires. Positioned at a fixed location and using radio waves, a microwave transmitter sends those waves across space to be

received by a microwave receiver at another fixed location. Microwave is broadband, so it can transmit a substantial amount of information from point to point, for use in cell phone and wireless Internet service, with no need for any other equipment between the two fixed locations.

II. Integrated Services Digital Network (ISDN)

Integrated Services Digital Network (ISDN) is a set of communication standards for simultaneous digital transmission of voice, video, data, and other network services over the traditional circuits of the public switched telephone network. It was first defined in 1988 in the CCITT red book. Prior to ISDN, the telephone system was viewed as a way to transport voice, with some special services available for data. The key feature of ISDN is that it integrates speech and data on the same lines, adding features that were not available in the classic telephone system. For AIR, The ISDN link is facilitated by the BSNL. Air is making use of BROADBAND ISDN. In addition to an STL system ISDN acts as a channel for live broadcasting of AIR programs.

SALIENT FEATURES OF ISDN:

- ISDN is a fast network
- ISDN is a telephone network/digital network.
- Integrated services

III. ANTENNAS

Antenna is usually a metallic device (a rod or a wire) used for radiating or receiving electromagnetic waves. The radio frequency power developed in the final stage of a transmitter is delivered through cables/feeders, without themselves consuming any power to the transmitting antenna. The RF energy gets converted into electromagnetic waves and travels in the free space at the speed of light. The receiving antenna picks up the radio waves and delivers useful signal at the

input of a receiver for reception of signals. The transmitting and receiving antennae are reciprocal in the sense, any characteristics of the antenna in general applies equally to both.Antennas play a vital role in AIR also since these are the communication links between the various stations and the transmitter complex as well. As the purpose differ the shape, size and specifications varies in case of Antennas. In an AIR station we can see a wide variety of Antenna systems. These include:

1. A C-band receiver antenna with a dish whose diameter is about 5m. This antenna receives signals from other stations like Delhi.

2. A DTH receiver antenna with a dish whose diameter is about 1m. This antenna receives signals from stations like Calicut and Thiruvananthapuram

3. Yagi antennas are mounted on the top of a mast of height around 45 m. This is the transmitter antenna for the microwave studio transmitter link. And a similar receiver antenna is mounted on a mast of

4. height about 50m. This enables the line of sight communication between the studio and the transmitter.

CHAPTER 5

CONCLUSION

Broadcasting, in its significance, reach and impact, constitutes the most powerful medium of mass communication. In India, All India Radio operates this service, over a network of broadcasting stations located over the country. Currently there are two complexes in AIR Churchgate, Studio cum office complex and the earth station. In studio complex, there are three studios, MUSIC, TALK and the PLAYBACK. The first two together called to be the recording studio facilitates sound recording and mixing whereas the latter helps in coordinating the programs, Announcements and advertisements.

Reflector antenna

Microwave link

The Studio console is the major equipment used in the STUDIO CONTROL ROOM. The various inputs to the console are the programs from various studios, the programs that are received using a C BAND receiver which is broadcasted from Delhi and the programs that are received via an ISDN link. The Outputs from the console is taken through two master amplifiers among which one is active at a time. This output is directed to the STUDIO TRANSMITTER LINK (STL). This further route the programs to TRANSMITTER at. The source to the transmitter complex is also realized using Microwave, FM Transmitter, ISDN or Optical Fiber Cables.

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PAYYANUR, KANNUR

CERTIFICATE NUMBER PCAI1871

COLORINO
Motivate to learn

CERTIFICATE

This is to certify that

HARSHA SHANKAR

Has successfully completed the training program on

Embedded C/C++

Conducted from 25th July 2018 to 31st July 2018

Coordinator

Principal

Trainer

Institution seal

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY PAYANUR

ARMINO EMBEDDED & AUTOMATION SOLUTIONS LLP CALICUT-11 Company Seal

armino

Dr. KEERTHI A. V.
PRINCIPAL
SREENARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

Armino Embedded and Automation Solutions LLP, West Nadakkavu, Calicut-11
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SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

HANDS ON TRAINING ON EMBEDDED C/C++

BY

ARMINO EMBEDDED AND AUTOMATION SOLUTIONS LTD, CALICUT

Submitted in partial fulfilment for the award of the degree of

Bachelor of Technology

Of

APJ Abdul Kalam Technological University

Submitted by

HARSHA SANKAR

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

2018

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ACKNOLEDEMENT

I would like to express my sincere gratitude to Armino Embedded and Automation Solutions Ltd for providing me with the opportunity to undertake this internship. My heartfelt appreciation goes to Mr. N.P Sooraj and Mr. Jithesh K, Resource person for his invaluable guidance, mentorship, and unwavering support throughout the duration of the internship program. Their expertise and dedication to the field of embedded systems have been instrumental in shaping my learning journey.

Furthermore, I would like to express my gratitude to the Head of the Electronics and communication department (HOD) of prof. Raveendran K. for their support and encouragement in facilitating this internship opportunity. Their guidance and support have been invaluable in enabling me to gain practical experience and enhance my skills in the field of embedded systems.

I am also indebted to my internship guide at Ms. Leena Narayanan for their continuous support, advice, and mentorship throughout the internship period. Their insights and feedback have been instrumental in shaping my learning objectives and achieving meaningful outcomes during the internship.

Lastly, I would like to extend my heartfelt thanks to my family and friends for their unwavering support, encouragement, and understanding throughout this journey.

Thank you to everyone who has contributed to making this internship experience a truly memorable and enriching one.

Dr. LEENA A V
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INTRODUCTION

Armino Embedded and Automation Solutions Ltd is a company based in Calicut, specializing in embedded systems and automation solutions. They focus on developing innovative hardware and software solutions for various industries, including automotive, healthcare, and consumer electronics. Their expertise lies in designing and implementing embedded systems using languages like C/C++.My internship at Armino Embedded and Automation Solutions Ltd took place on the 25th, 26th, and 28th of July at Sree narayana Guru College of Engineering & Technology ,Payyanur. During this time, I had the opportunity to delve into the world of embedded systems and gain hands-on experience with C/C++ programming in a professional setting.

This report will provide an overview of my internship experience, including an introduction to the company, details of the projects I worked on, the technical skills I acquired, lessons learned, and concluding remarks. Additionally, I will reflect on how this internship has contributed to my academic and career goals in the field of embedded systems.

COMPANY BACKGROUND

Armino Embedded and Automation Solutions Ltd is a leading company headquartered in Calicut, specializing in embedded systems and automation solutions. Their mission is to provide cutting-edge technological solutions to enhance efficiency and innovation across various industries.

The company's vision is to be a global leader in embedded systems and automation, driving advancements in technology through continuous research and development. Their core activities revolve around designing and developing customized hardware and software solutions tailored to meet the specific needs of their clients.

Armino Embedded and Automation Solutions Ltd is strategically located in Calicut, a bustling city in the state of Kerala, India. With its proximity to major industrial hubs and access to a talented pool of engineers and technicians, the company is well-positioned to serve clients both locally and internationally.

OVERVIEW OF EMBEDDED SYSTEMS

Day1: Embedded Systems and Sensor Interfacing

The first day began with Mr. N.P Sooraj and Mr. Jithesh K , resourse person of the program providing an insightful overview of embedded systems. This likely included discussions on the architecture of embedded systems, which typically consist of a microcontroller or microprocessor, memory, input/output interfaces, and often an operating system or firmware.

During this session, the applications of embedded systems would have been explored, showcasing how they are utilized in various industries such as automotive, healthcare, consumer electronics, and industrial automation. Understanding the breadth of applications helps participants appreciate the importance and versatility of embedded systems.

After the theoretical introduction, the focus shifted to practical hands-on learning in the afternoon session. Participants were likely provided with Arduino boards, a popular platform for prototyping embedded systems, along with a variety of sensors. Through guided exercises, attendees would have learned how to interface these sensors with the Arduino board, utilizing digital and analog input/output pins. This hands-on experience is invaluable for reinforcing theoretical concepts and gaining confidence in working with hardware components.

Day 2: Wireless Communication and Machine-to-Machine Communication

On the second day, the agenda expanded to cover wireless communication, a crucial aspect of modern embedded systems. Basic concepts such as different wireless protocols (e.g., Wi-Fi, Bluetooth, Zigbee) and their applications would have been discussed. Participants would have gained insights into the advantages and limitations of each protocol, as well as considerations for selecting the most appropriate one for a given application.

Machine-to-machine (M2M) communication was introduced, highlighting its significance in enabling interconnected devices to communicate and collaborate autonomously. This discussion likely touched upon concepts such as sensor networks, data exchange formats, and communication standards, providing participants with a deeper understanding of how embedded systems interact with each other in real-world scenarios.

Day 3: Introduction to C++ and Hands-on Training with Arduino

The final day of the internship program began with an introduction to the fundamentals of C++, a widely-used programming language in embedded systems development. Participants were introduced to basic syntax, data types, control structures, and object-oriented programming principles. This foundational knowledge sets the stage for participants to write more sophisticated embedded software and firmware.

Following the theoretical introduction to C++, participants engaged in practical exercises where they wrote and executed simple C++ programs. These exercises would have covered common programming tasks such as arithmetic operations, conditional statements, loops, and functions, gradually building participants' programming proficiency.

The core focus of the internship program was hands-on training with Arduino boards and sensors. During the interactive lab session, Mr. Sooraj provided guidance and instruction as participants worked on implementing various designs and projects using Arduino and embedded C programming. This hands-on experience allowed participants to apply the knowledge gained throughout the internship to solve real-world problems, fostering a deeper understanding of embedded systems development.

CONCLUSION

In conclusion, my internship experience at Armino Embedded and Automation Solutions Ltd was incredibly enriching and rewarding. Over the course of three days, I was provided with a comprehensive introduction to the fascinating world of embedded systems and automation.

The internship began with a thorough overview of embedded systems, covering their architecture, applications, and significance in various industries. This foundational understanding served as a solid framework for the hands-on activities that followed.

Through interactive lab sessions and practical exercises, I gained invaluable hands-on experience with Arduino boards and sensors. From interfacing sensors to writing and executing C++ programs, each activity helped reinforce theoretical concepts and develop practical skills essential for embedded systems development.Moreover, the discussions on wireless communication and machine-to-machine communication expanded my knowledge and highlighted the importance of connectivity in modern embedded systems.

The guidance and expertise provided by Mr. N.P Sooraj and Mr. Jithesh K were instrumental in facilitating my learning journey. Their depth of knowledge and passion for the subject inspired me to delve deeper into the intricacies of embedded systems.

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28/07/2018

CERTIFICATE

This is to certify that **Mr. Adarsh Prakash** (Reg.No SNC15EC001) of **Sree Narayana Guru College of Engineering and Technology** has successfully completed internship programme on Android Programming from 24th July 2018 to 28th July 2018 under our guidance.

During the period of his internship programme with us he was found punctual, hardworking and inquisitive.

We wish him every success in life!

For Alisons Infomatics Pvt Ltd

Neenu Mathew

HR-Manager

ALISONS INFOMATICS PVT. LTD. KANNUR

Dr. LEENA. A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

SREE NARAYANA GURU COLLEGE OF ENGINEERING

& TECHNOLOGY

(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

Internship on

ANDROID PROGRAMMING

at

ALISONS INFOMATICS PVT LTD

Submitted in partial fulfilment for the award of the degree of

Bachelor of Technology

Of

APJ Abdul Kalam Technological University

Submitted by

ADARSH PRAKASH

DEPARTMENT OF ELECTRONICS AND

COMMUNICATION ENGINEERING

2018

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PAYYANUR, KANNUR

ACKNOWLEDGEMENT

I am deeply grateful to Alison Informatics (P) Ltd for providing me with the opportunity to undertake a valuable internship experience focused on Android Programming. It has been an insightful journey that has significantly enhanced my knowledge and skills in the field of Electronics and Communication Engineering.

I would like to extend my sincere appreciation to Ms. Subitha M B for her guidance, mentorship, and unwavering support throughout my internship. Her expertise and encouragement have been instrumental in deepening my understanding of Android development and honing my programming abilities.

I am also thankful to the entire team at Alison Informatics (P) Ltd for their welcoming environment and for providing me with ample opportunities to apply theoretical concepts into practical projects. Their collaborative spirit and dedication have fostered a conducive learning environment.

Furthermore, I extend my heartfelt thanks to my college, Sree Narayana Guru College of Engineering & Technology, for facilitating this internship opportunity and for their continuous support in my academic and professional pursuits.

Lastly, I would like to express my gratitude to my family and friends for their encouragement and understanding throughout this internship journey.

I am truly thankful to everyone who has contributed to making this internship experience enriching and rewarding.

Adarsh Prakash

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INTRODUTION

Company Overview

Alisons Infomatics (P) Ltd is a prominent IT company with a rich history spanning 14 years, specializing in comprehensive IT solutions. Throughout its tenure, Alisons has undertaken a myriad of projects catering to a diverse array of global clientele. Renowned for its proficiency in developing, delivering, and deploying applications across various platforms, Alisons has solidified its position as a leading name in the IT industry.

Distinguished by its commitment to excellence, Alisons Infomatics boasts a track record of providing end-to-end managed IT services to businesses for over a decade. The team at Alisons brings together decades of collective experience, ensuring the delivery of top-tier IT solutions. What sets Alisons apart is its unique approach, combining the expertise of a seasoned technology firm with the personalized touch of a locally-owned business.

In essence, Alisons Infomatics (P) Ltd stands as a testament to innovation, reliability, and a relentless pursuit of customer satisfaction in the ever-evolving landscape of IT solutions.

OVERVIEW OF THE INTERNSHIP PROGRAM

The internship program on Android Programming at Alisons Infomatics (P) Ltd, conducted from July 24th, 2018 to July 28th, 2018, provided a valuable opportunity for participants to delve into the realm of mobile application development. Structured to offer hands-on experience and practical insights, the program aimed to equip interns with essential skills and knowledge in Android programming.

Key aspects of the internship program included:

Duration: The program spanned five days, offering an intensive learning experience within a condensed timeframe.

Focus on Android Programming: The program centered specifically on Android application development, catering to individuals interested in mastering this specialized field.

Hands-on Training: Interns were actively engaged in practical exercises and coding sessions, enabling them to apply theoretical concepts to real-world scenarios.

Guidance from Industry Experts: Experienced professionals from Alisons Infomatics provided mentorship and guidance throughout the program, sharing their expertise and insights with the interns.

Project-based Learning: Interns had the opportunity to work on projects relevant to Android programming, gaining firsthand experience in building functional applications.

Collaborative Environment: The internship fostered a collaborative atmosphere, encouraging knowledge sharing and teamwork among participants.

Networking Opportunities: Interns had the chance to interact with industry professionals and peers, expanding their professional network and gaining valuable contacts.

PROJECT OVERVIEW

Introduction to Mobile Technologies

Background about Mobile Technologies

Mobile technology is the technology used for cellular communication. Since the start of this millennium, a standard mobile device has gone from being no more than a simple two-way pager to being a mobile phone, GPS navigation device, an embedded web browser and instant messaging client, and a handheld game console. Many types of mobile operating systems are available for smart phones, including Android, BlackBerry OS, iOS, Symbian, Windows Phone etc.

Android

Android is an operating system based on Linux with a Java programming interface. Android is a mobile operating system (OS) developed by Open HeadSet Alliance. Android is the first completely open source mobile OS. Building on the contributions of the open-source Linux community and more than 300 hardware, software, and carrier partners, Android has rapidly become the fastest-growing mobile OS.

Mobile Application

A mobile application (or mobile app) is a software application designed to run on smart phones, tablet computers and other mobile devices. Mobile apps were originally offered for general productivity and information retrieval, including email, calendar, contacts, and stock market and weather information.Android Building Blocks

Each building block is a different point through which the system can enter your application. Not all components are actual entry points for the user and some depend on each other, but each one exists as its own entity and plays a specific role—each one is a unique building block that helps define your application's overall behaviour.

Table 1: Android Version

Code name	Version number	Initial release date	API level	Support status
N/A	1.0	23 September 2008	1	Discontinued
	1.1	9 February 2009	2	Discontinued
Cupcake	1.5	27 April 2009	3	Discontinued
Donut	1.6	15 September 2009	4	Discontinued
Eclair	2.0 – 2.1	26 October 2009	5–7	Discontinued
Froyo	2.2 – 2.2.3	20 May 2010	8	Discontinued
Gingerbread	2.3 – 2.3.7	6 December 2010	9–10	Discontinued
Honeycomb	3.0 – 3.2.6	22 February 2011	11–13	Discontinued
Ice Cream Sandwich	4.0 – 4.0.4	18 October 2011	14–15	Discontinued
Jelly Bean	4.1 – 4.3.1	9 July 2012	16–18	Discontinued
KitKat	4.4 – 4.4.4	31 October 2013	19–20	Security updates only
Lollipop	5.0 – 5.1.1	12 November 2014	21–22	Supported
Marshmallow	6.0 – 6.0.1	5 October 2015	23	Supported
Nougat	7.0 – 7.1	22 August 2016	24–25	Supported

Activities

An activity is an application component that provides a screen with which users can interact in order to do something, such as dial the phone, take a photo, send an email, or view a map. Each activity is given a window in which to draw its user interface. The window typically fills the screen, but may be smaller than the screen and float on top of other windows. An application usually consists of multiple activities that are loosely bound to each other. Typically, one activity in an application is specified as the "main" activity, which is presented to the user when launching the application for the first time. Each activity can then start another activity in order to perform different actions. Each time a new activity starts, the previous activity is stopped, but the system preserves the activity in a stack (the "back stack"). When a new activity starts, it is pushed onto the back stack and takes user focus. The back stack abides to the basic "last in, first out" stack mechanism, so, when the user is done with the current activity and presses the Back button, it is popped from the stack (and destroyed) and the previous activity resumes. When an activity is stopped because a new activity starts, it is notified of this change in state through the activity's lifecycle call-back methods. There are several call-back methods that an activity might receive, due to a change in its state— whether the system is creating it, stopping it, resuming it, or destroying it—and each call-back provides you the opportunity to perform specific work that's appropriate to that state change. For instance, when stopped, your activity should release any large objects, such as network or database connections. When the activity resumes, you can reacquire the necessary resources and resume actions that were interrupted. These state transitions are all part of the activity lifecycle.

Fig. 1: Activity Transition

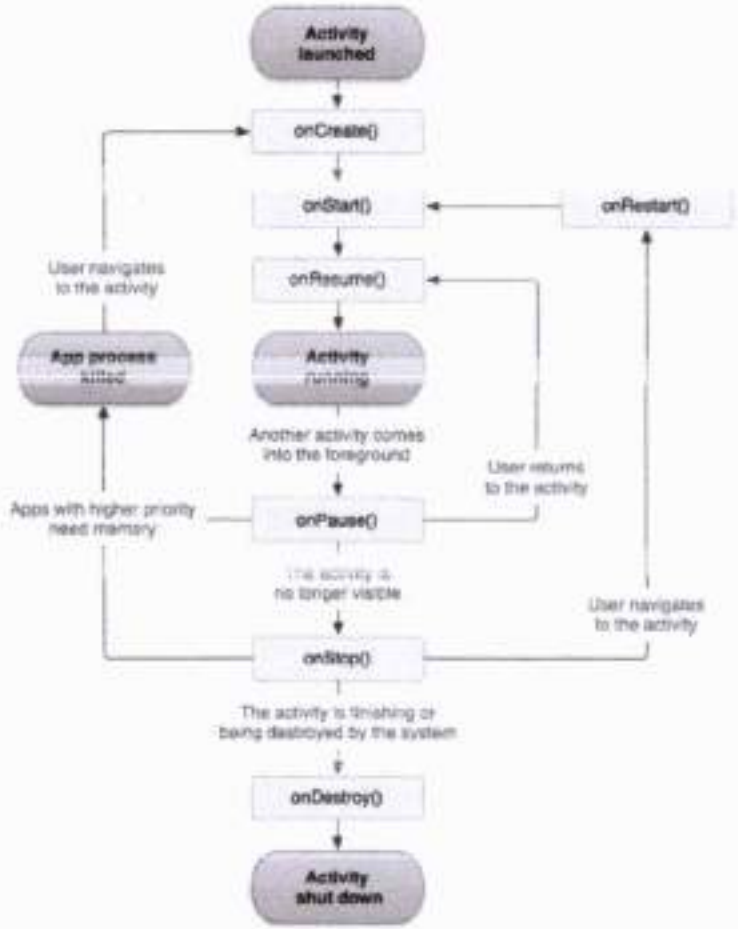

Fig. 2: Activity Life Cycle

Services

A service is an application component that can perform long-running operations in the background, and it does not provide a user interface. Another application component can start a service, and it continues to run in the background even if the user switches to another application. Additionally, a component can bind to a service to interact withit and even perform inter process communication (IPC).

For example, a service can handle network transactions, play music, perform file I/O, or interact with a content provider, all from the background.

A service is started when an application component (such as an activity) calls startService(). After it's started, a service can run in the background indefinitely, evenif the component that started it is destroyed. Usually, a started service performs a single operation and does not return a result to the caller. For example, it can download or

upload a file over the network. When the operation is complete, the service should stop itself. A service is bound when an application component binds to it by calling bindService(). A bound service offers a client-server interface that allows components to interact with the service, send requests, receive results, and even do so across processes with inter process communication (IPC). A bound service runs only as long as another application component is bound to it. Multiple components can bind to the service at once, but when all of them unbind, the service is destroyed.

Content Providers

A content provider manages a shared set of application data. You can store the data in the file system, a SQLite database, on the web, or any other persistent storage location your application can access. A content provider provides a structured interface to application data. Via a content provider your application can share data with other applications. Android contains a SQLite database which is frequently used in conjunction with a content provider.

Broadcast Receivers

Broadcast Receivers simply respond to broadcast messages from other applications or from the system itself. These messages are sometime called events or intents.

For example, applications can also initiate broadcasts to let other applications know that some data has been downloaded to the device and is available for them to use, so this is broadcast receiver who will intercept this communication and will initiate appropriate action.

Intent

Intents are asynchronous messages which allow the application to request functionality from other Android components, e.g. from services or activities. An application can call a component directly (explicit Intent) or ask the Android system to evaluate registered components based on the intent data (implicit intents). For example the application could implement sharing of data via an intent and all components which allow sharing of data would be available for the user to select. Applications register themselves to an intent via an intent. Filter Intents allow an android application to start and to interact with components from other Android applications.

Using intent to launch the activities

There are separate methods for activating each type of component:

- You can start an activity (or give it something new to do) by passing Intent to startActivity() or startActivityForResult() .
- You can start a service (or give new instructions to an ongoing service) by passing an Intent tostartService(). Or you can bind to the service by passing an Intent to bindService().
- You can initiate a broadcast by passing an Intent to methods like sendBroadcast(), sendOrderedBroadcast(), or sendStickyBroadcast().
- You can perform a query to a content provider by calling query on a ContentResolver.

Introduction to the Development tool "Android Studio"

Android Studio is the official integrated development environment (IDE) for Android platform development. Android Studio is freely available under the apache license. Android Studio is designed specifically for Android development.

Android application development can be started on either of the following operating systems –

- Microsoft® Windows® 8/7/Vista/2003 (32 or 64-bit).
- Mac® OS X® 10.8.5 or higher, up to 10.9 (Mavericks).
- GNOME or KDE desktop.

All the required tools to develop Android applications are open source and can be downloaded from the Web.

Following is the list of software's that is needed before starting Android application programming.

- Java JDK5 or later version
- Java Runtime Environment (JRE) 6
- Android Studio

Android UI Design

Introducing Layouts

Frame Layout

Frame layouts are one of the simplest layout types used to organize controls within theuser interface of an Android application. They are used less often than some other layouts, simply because they are generally used to display only one view, or views which overlap. The efficiency of a frame layout makes it a good choice for screens containing few view controls (home screens, game screens with a single canvas, and the like). Sometimes other inefficient layout designs can be reduced to a frame layout design that is more efficient, while other times a more specialized layout type is appropriate. Frame layouts are the normal layout of choice when you want to overlapviews.

Linear Layout

Linear layouts are one of the simplest and most common types of layouts used by Android developers to organize controls within their user interfaces. The linear layout works much as its name implies: it organizes controls linearly in either a vertical or horizontal fashion. When the layout's orientation is set to vertical, all child controls within it are organized in a single column; when the layout's orientation is set to horizontal, all child controls within it are organized in a single row. Some of the most important attributes you'll use with linear layouts include:

- The orientation attribute (required), which can be set to vertical or horizontal.
- The gravity attribute (optional), which controls how all child controls are aligned and displayed within the linear layout (class: LinearLayout).
- The layout_weight attribute (optional, applied to each child control) specifies each child control's relative importance within the parent linear layout (class: LinearLayout.LayoutParams).

Relative Layout

The relative layout works much as its name implies: it organizes controls relative to one another, or to the parent control itself. It means that child controls, such as ImageView, TextView, and Button controls, can be placed above, below, to the left orright, of one another. Child controls can also be placed in relation to the parent (the relative layout

container); including placement of controls aligned to the top, bottom, left or right edges of the layout.

Some specific attributes apply to relative layouts-namely the child rules, including:

- Rules for child control centering within the parent layout, including: center horizontally, center vertically, or both.
- Rules for child control alignment within the parent layout, including: align withtop, bottom, left or right edge of another control.
- Rules for child control alignment in relation to other child controls, including: align with top, bottom, left or right edge.
- Rules for child control placement in relation to other child controls, including: placement to the left or right of a specific control, or above or below another control.

Table Layout

A table layout is exactly what you might expect: a grid of made up of rows and columns, where a cell can display a view control. From a user interface design perspective, a Table Layout is comprised of Table Row controls—one for each row inyour table. The contents of a Table Row are simply the view controls that will go in each "cell" of the table grid. Although table layouts can be used to design entire user interfaces, they usually aren't the best tool for doing so, as they are derived from LinearLayout and not the most efficient of layout controls. However, for data that is alreadyin a format suitable for a table, such as spreadsheet data, table layout may be a reasonable choice.

Different UI widgets available in Android

- Text View
- Edit Text
- List View
- Button
- CheckBox
- Radio Button

Dialog Box

A dialog is a small window that prompts the user to make a decision or enter additional

information. A dialog does not fill the screen and is normally used for modal events that require users to take an action before they can proceed.

Toast

A toast provides simple feedback about an operation in a small popup. It only fills the amount of space required for the message and the current activity remains visible and interactive.

Adapters

An Adapter acts as a bridge between a ListView and the underlying data for that view.The Adapter provides access to the data items. The Adapter is also responsible for making a View for each item in the data set.

Array Adapter

Array Adapter is a concrete BaseAdapter that is backed by an array of arbitrary objects.By default this class expects that the provided resource id references a single TextView. If you want to use a more complex layout, use the constructor that also takes a field id. That field id should reference a TextView in the larger layout resource.

Notification Manager

A notification is a message you can display to the user outside of your application's normal UI.

When you tell the system to issue a notification, it first appears as an icon in the notification area. To see the details of the notification, the user opens the notification drawer. Notification Manager Class is used to notify the user of events that happen. This is how you tell the user that something has happened in the background.Notifications can take different forms:

- A persistent icon that goes in the status bar and is accessible through the launcher, (when the user selects it, a designated Intent can be launched).
- Turning on or flashing LEDs on the device.
- Alerting the user by flashing the backlight, playing a sound, or vibrating.

Database SQLite

SQLite is an Open Source database. SQLite supports standard relational database features like SQL syntax, transactions and prepared statements. The database requires limited memory at runtime (approx. 250 Kbytes) which makes it a good candidate from being embedded into other runtimes.

SQLite is embedded into every Android device. Using a SQLite database in Android does not require a setup procedure or administration of the database. We only have to define the SQL statements for creating and updating the database. Afterwards the database is automatically managed for us by the Android platform.
If our application creates a database, this database is by default saved at directory - DATA/data /APP_NAME/ databases /FILENAME.

SQLiteDatabase is the base class for working with a SQLite database in Android and provides methods to open, query, update and close the database.

- SQLiteDatabase provides the insert(), update() and delete() methods.
- The object ContentValues allows to define key/values. The key represents the table column identifier and the value represents the content for the table record in this column. ContentValues can be used for inserts and updates of database entries.
- Queries can be created via the rawQuery() and query() methods or via the SQLiteQueryBuilder class.
- rawQuery() directly accepts an SQL select statement as input.
- query() provides a structured interface for specifying the SQL query.
- SQLiteQueryBuilder is a convenience class that helps to build SQL queries.

SQLiteOpenHelper

To create and upgrade a database in our Android application we create a subclass of the SQLiteOpenHelper class. In the constructor we call the super() method of SQLiteOpenHelper, specifying the database name and the current database version.

In this class we need to override the following methods to create and update our database-

- onCreate() is called by the framework, if the database is accessed but not yet created.
- onUpgrade() called, if the database version is increased in your application code. This method allows you to update an existing database schema or to drop the existing database and recreate it via the onCreate() method.

Query()

The following gives an example of a query() call-

return database.query(DATABASE_TABLE, new String[] { KEY_ROWID, KEY_CATEGORY, KEY_SUMMARY, KEY_DESCRIPTION }, null, null, null, null, null);

Opening and Closing a Database

SQLiteDatabase db = this.getWritableDatabase(); //Opening DatabaseConnection
ContentValues values = new ContentValues();
values.put(KEY_NAME, contact.getName()); //Contact Name
values.put(KEY_PH_NO, contact.getPhoneNumber()); //Contact Phone Number
db.insert(TABLE_CONTACTS, null, values); //Inserting Row
db.close(); //Closing database connection

Cursor

Cursor provides typed get*() methods, e.g. getLong(columnIndex), getString(columnIndex) to access the column data for the current position of the result.The "columnIndex" is the number of the column you are accessing. A Cursor needs to be closed with the close() method call.

Insert

```
ContentValues values = new ContentValues();

values.put(MySQLiteHelper.COLUMN_COMMENT, comment);


long insertId = database.insert(MySQLiteHelper.TABLE_COMMENTS, null,
values);

cursor.close();

return newComment;
```

Delete

```
database.delete(MySQLiteHelper.TABLE_COMMENTS,MySQLiteHelper.COLUM
N_ID + " = " + id, null);
```

Content provider and Sharing data

A SQLite database is private to the application which creates it. If you want to sharedata with other applications you can use a content provider. A content provider allows applications to access data. In most cases this data is stored in a SQlite database. While a content provider can be used within an application to access data,it is typically used to share data with other application. As application data is by default private, a content provider is a convenient to share your data with other application based on a structured interface. A content provider must be declared in the AndroidManifest.xml file.

CONCLUTION

The scope of android applications is increasing day by day. Its development has become an essential partof today's programming curriculum. The society has a dearth of ideas. These ideascan be most effectively implemented by developing user-friendly android applications. Through this internship, I got to learn a lot, including, database connectivity using SQLite. Being new to app development, I came to know a lot about developing an android application from scratch.

Generally I had never used git or github while developing web applications or softwares, which resulted in greater development time, bug fixing time etc. Learninggit was I think one of the most important skill I developed at Solution Avenues. Now I always use version control for writing any text or code.

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
INTERNSHIP DETAILS
ACADEMIC YEAR: (2023-2024)

SI NO	NAME	INDUSTRY	DURATION
1.	ADHIN.O	NEST INSTITUTE OF FIBRE OPTIC TECHNOLOGY	5 days 12.9.2023-16.09.2022
2.	AMAL.K.P	NEST INSTITUTE OF FIBRE OPTIC TECHNOLOGY	5 days 12.9.2023-16.09.2022
3.	ANURAJ.N	NEST INSTITUTE OF FIBRE OPTIC TECHNOLOGY	5 days 12.9.2023-16.09.2022
4.	HRISHIKESH.P.V	NEST INSTITUTE OF FIBRE OPTIC TECHNOLOGY	5 days 12.9.2023-16.09.2022
5.	NIHAD T	NEST INSTITUTE OF FIBRE OPTIC TECHNOLOGY	5 days 12.9.2023-16.09.2022
6.	SHINOY.BIJU	NEST INSTITUTE OF FIBRE OPTIC TECHNOLOGY	5 days 12.9.2023-16.09.2022

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This certificate is being issued in compliance with his academic requirements.

General Manager
NeST Cyber Campus

IN ASSOCIATION WITH NeST DIGITAL

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(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

Industrial Training

At

NeST CYBER CAMPUS

NeST Chamber, Aluva Cochin

Submitted in partial fulfillment for the award of the degree of

Bachelor of Technology

Of

APJ Abdul Kalam Technological University

Submitted by

ADHIN O

AMAL K P

ANURAJ N

HRISHIKESH P V

NIHAD T

SHINOY BIJU

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PAYYANUR, KANNUR

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING (2023)

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

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This is to certify that Industrial Training at "NEST CYBER CAMPUS ALUVA,ERNAKULAM" is a bonafide record of the workdone by **ADHIN O AMAL K P,ANURAJ N,HRISHIKESH P V,NIHAD T,SHINOY BIJU**of 5th semester **DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING** towards the partial fulfillment for the award of the degree pf **Bachelor of Technology** by APJ Abdul Kalam Technological University

Faculty Advisor
Department

Head of the
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"It is not possible to prepare a project report without the assistance & Encouragement of other people. This one is certainly no exception."

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We are extremely grateful to our dear Principal, Dr.LEENA A V, for providing us all the facilities for the completion of this Industrial Training.

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INTRODUCTION

The field of electrical and electronics engineering is characterized by rapid advancements in technology, constantly pushing the boundaries of innovation and application. As part of our ongoing commitment to bridging the gap between theoretical knowledge and practical application, this internship report aims to provide a comprehensive overview of key concepts and technologies encountered in the realm of embedded systems and electronic components.

Throughout this report, we will delve into various facets of electronic components, from the fundamental principles of analog and digital electronics to the intricacies of sensors and microcontrollers. We will explore the role of voltage and current sensors in measuring electrical parameters, as well as the functionalities and applications of microprocessors and microcontrollers in electronic systems.

Moreover, this report will elucidate the significance of Arduino, a versatile platform renowned for its accessibility and utility in prototyping and developing embedded systems projects. Through practical demonstrations and case studies, we will showcase the application of Arduino in designing and implementing embedded systems, including the development of a Bluetooth-controlled car.

Furthermore, communication protocols play a pivotal role in facilitating seamless data exchange and interaction between devices in embedded systems. We will elucidate the workings of various communication protocols, such as UART, SPI, I2C, Ethernet, Bluetooth, and Wi-Fi, highlighting their features, advantages, and applications in embedded systems.

In essence, this internship report serves as a comprehensive guide for students of electrical and electronics engineering, offering insights into the intricacies of electronic components, analog and digital electronics, sensors, microprocessors, microcontrollers, Arduino, communication protocols, embedded systems, and the practical implementation of a Bluetooth-controlled car. By gaining a deeper understanding of these concepts and technologies, students will be better equipped to navigate the dynamic landscape of modern engineering and contribute to the development of innovative solutions that shape our technological future.

ELECTRONIC COMPONENTS- ACTIVE COMPONENTS

• Active components are those that deliver or produce energy or power in the form of a voltage or current

• Examples are diodes, transistors, integrated circuits .

• An active component can supply power to an electric circuit.

FIgure 1 - Active Components

PASSIVE COMPONENTS

• Passive components are those that utilize or store energy in the form of voltage or current.

• Examples are resistors, capacitors, and inductors.

• A passive component cannot deliver power, it can only absorb the power in the circuit RESISTOR.

• An electrical component that limits or regulates the flow of electrical current in an electronic circuit .

• Greater the resistance value lesser the current flow.

• Resistor value measured in ohms .

• The value of the resistor is read using a colour code scheme CAPACITOR .

• A component with two leads(connections).

• Its function in a circuit is to charge up to a voltage, hence storing electrical charge .

• Capacitor value measured in Farads(F) INDUCTOR.

• It is used in most power electronic circuits to store energy in the form of magnetic energy when electricity is applied to it DIODE .

• Its function in a circuit is to control the direction of electric current flow through the circuit .

• It has two leads(connections) .

• Named as Anode(+) and Cathode(-) .

• A ring printed on the one side of the lead indicates the cathode LIGHT EMITTING DIODE (LED) .

• Its function in a circuit is to indicate the presence of a voltage, or to produce light .

• When the LED is connected in forward bias it will light up .

• In reverse bias it will not light up TRANSISTORS.

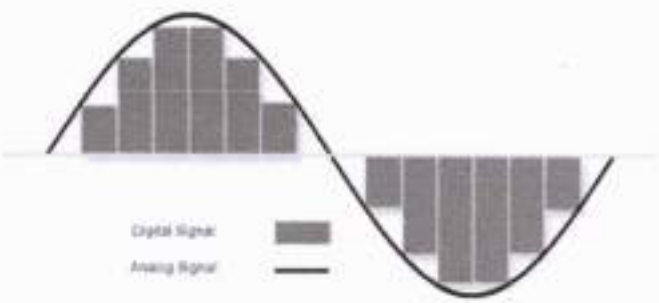
• A component with three leads.

• Its function in a circuit is an electronic switch, or as an amplifier .

• Two types of transistors.

FIgure 2 - Passive Components

BASICS OF ANALOG AND DIGITAL ELECTRONICS



ANALOG ELECTRONICS

• Electronic systems with a continuously varying signal.

• The term "analogue" describes the proportional relationship between a signal and a voltage or current that represents the signal.

• It can be time varying signal,can be periodic or not .

Minimum or maximum values can be either positive or negative.

• In analog electronics, two types of components are used to design the systems which are: the active elements such as diode, transistors, etc. and the passive elements such as resistors, capacitors, inductors, etc.

DIGITAL ELECTRONICS

- Electronic systems that uses digital signals or discrete time signals.
- Here system has discrete waveforms that have only two possible value at a moment.
- Digital refers to electronic technology that uses discrete value i.e, zeroes and ones, to generate ,store and process data.
- Digital electronics systems are usually made from a combination of logic gates, often packaged in an integrated circuit (IC).
- The digital electronics uses binary logic function to perform operations, the basic mean of binary logic function is that it has only two states 'active high' and 'active low'.

DIGITAL AND ANALOG SENSORS

TYPES OF SIGNALS

- ANALOG
  - An analog signal is a continuous signal and is often represented by a V(t).
  - A dimmer light switch continuously increases/decreases the current
- DIGITAL
  - A digital signal is a discrete time signal, binary signal.
  - An on/off light switch applies a fixed, predetermined voltage

ANALOG SENSORS

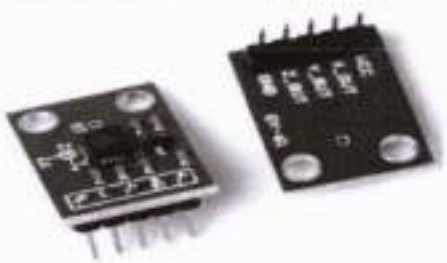
- Sensors that produce continuous analog output signal and these sensors are considered as analog sensors
- This continuous output signal produced by the analog sensors is proportional to the measurand
- Practical examples of various types of analog sensors are as follows:

accelerometers, pressure sensors, light sensors, sound sensors, temperature sensors and so on...

ACCELEROMETERS

Analog sensors that detect changes in position, velocity, orientation, shock, vibration, and tilt by sensing motion are called as accelerometers

These accelerometers are available as analog and digital sensors, based on the output signal



LIGHT SENSOR

- Analog sensors that are used for detecting the amount of light striking the sensors are called as light sensors.
- Photo diode, phototransistor, photo-voltaic cells, LED are some of the examples.

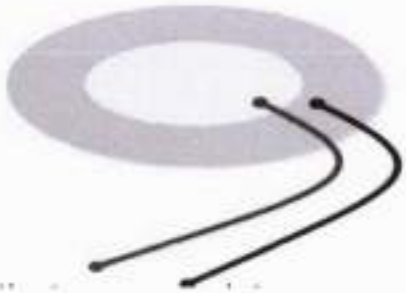
SOUND SENSORS

- Analog sensors that are used to sense sound level are called as sound sensors.

These analog sound sensors translate the amplitude of the acoustic volume of the sound into an electrical voltage for sensing sound level.

PRESSURE SENOSOR

- The analog sensors are used to measure the amount of pressure applied to a sensor are called as analog pressure sensors
- It will produce an analog output signal that is proportional to the amount of pressure applied



ANALOG TEMPERATURE SENSOR

- Analog temperature sensors are thermistors
- Thermally sensitive resistor
- Used for detecting changes in temperature

DIGITAL SENSORS

- Data conversion and data transmission takes place digitally
- Overcoming the drawbacks of analog sensors

- Signal measured is directly converted into digital signal output inside the digital sensor itself

DIGITAL ACCELEROMETERS

- The method of generation of variable frequency square wave output by the digital accelerometer is called pulse width modulation.
- The output PWM signal, pulse width or duty cycle is proportional to the acceleration value.

CURRENT SENSORS

INTRODUCTION

• It refers to electronic devices or components used to measure the flow of electric current in a circuit.

• They are important for various applications, including industrial automation, power monitoring, and electronic circuit protection.

• Hall Effect Sensors, Rogowski Coils, Shunt Resistors, Resistor-Based Current Sensors, Fiber Optic Current Sensors are some of the examples.

HALL EFFECT SENSORS

• Uses the Hall effect to measure current.

• When current flows through a conductor, it generates a magnetic field around the conductor .

ROGOWSKI COILS

• They are flexible current sensors that can be wrapped around a conductor to measure alternating current (AC).

• They are often used in applications where it's impractical to break the circuit to insert a current transformer .

RESISTOR-BASED CURRENT SENSORS

• These sensors use resistors with a known resistance value that changes with temperature.

• By measuring the change in resistance due to the current passing through the resistor, the current can be determined.

FIBER OPTIC CURRENT SENSORS

• These sensors use fiber optic technology to measure current.

• They are immune to electromagnetic interference and can be used in high-voltage and high-noise environments.

VOLTAGE SENSORS INTRODUCTION

• Also known as voltage detectors or voltage transducers, are electronic devices or components designed to measure and monitor electrical voltage levels in a circuit or system.

• They are crucial for various applications, including electronics testing, power management, and safety.

• AC voltage sensor, DC voltage sensor, Zener diode voltage sensor, Opamp voltage sensor are the some of the examples.

AC VOLTAGE SENSORS

• They are designed specifically for measuring alternating current (AC) voltage levels.

• They may include features like phase detection and frequency measurement.

DC VOLTAGE SENSORS

• These sensors are used to measure direct current (DC) voltage levels.

• They are often employed in battery management systems and electronic control circuits.

ZENER DIODE VOLTAGE SENSOR

• Utilizes the voltage regulation characteristics of Zener diodes.

• Zener diode maintains a constant voltage across its terminals, making it useful for voltage reference and measurement

OP-AMP VOLTAGE SENSOR

• Op-amps can be configured as voltage followers or amplifiers to measure and monitor voltage levels.

• Often used in instrumentation circuits and amplification of weak signals

MICROPROCESSORS AND MICROCONTROLLERS

MICROPROCESSOR

- Microprocessor is a chip that is said to be the **computer's brain**. It is also called the **central processing unit** (CPU).
- This single chip can process all the logical and computational information like addition/subtraction, I/O management, and many more.
- It **controls all the system components** like USB, I/O devices, monitors, memory, etc.
- To perform the instructions given by the users, it **fetches** the data, **decodes** it from high-level language to machine language, and then **executes** the given instructions.

COMPONENTS

- **Registers**: It is the temporary storage location for executing the given instruction. After execution, the data is sent to the source and erased from registers.

- **Arithmetic and Logic Unit**: It performs arithmetic and logical operations like mathematical calculation.
- **Timing and Control Unit**: Ensures all internal and external components are working together in time and sequence.

WORKING

A microprocessor is a standalone chip connected with external peripherals like I/O devices and memory units to execute a given set of instructions.

- Input device to **pass the information** from the user to the memory unit.
- Memory to **retain the information** and **perform the required function**.
- Output devices to **display the results**.

INSTRUCTION SET ARCHITECTURE

Complex Instruction Set Computer (CISC):

- Complex instruction set computer (CISC) uses a minimal number of instructions per program.
- One command performs all the functions like loading, evaluating, and storing. Hence, making the process complex.
- It disregards the number of cycles per command.
- Its prime focus is to build complex commands directly to the hardware.
- Examples:- INTEL and AMD CPUs

Reduced Instruction Set Computer (RISC):

- Reduced instruction set computer (RISC) was designed as a reaction to CISC to minimize the performance time by reducing the computer's instruction set.
- Every command needs only one clock cycle to perform the assigned instructions.
- This requires the RAM to store more instructions and the compiler to convert high-level language commands to binary code more efficiently.
- Examples :- MIPS, PowerPC, Arm Processors.

PROS AND CONS

Pros:

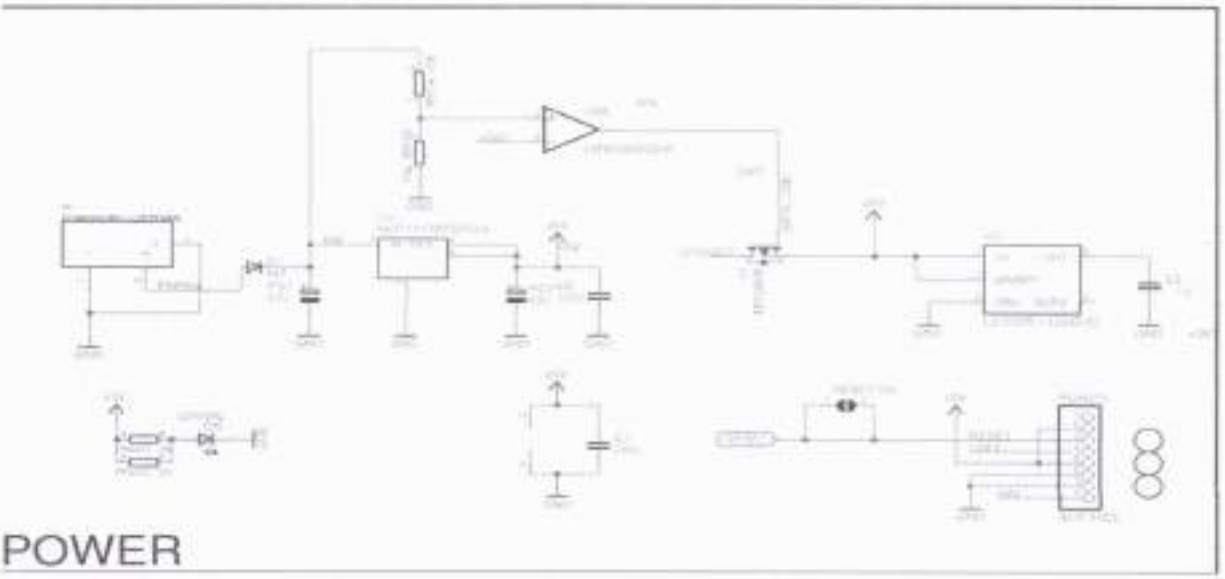
- Quickly moves data to various locations
- Used for general purpose
- Capable of performing several tasks at a time

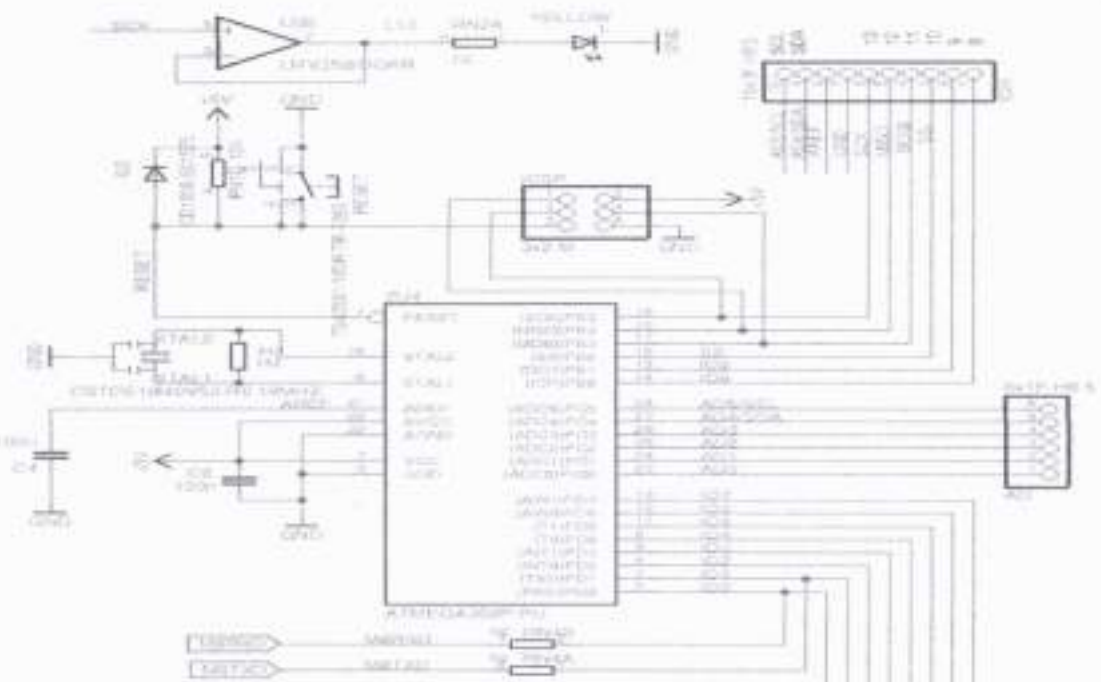
Cons:

- Expensive
- Huge in size

- Does not have RAM, ROM, or I/O attached to it

MICROPROCESSOR	MICROCONTROLLER
consists only of the **memory unit**. Hence, additional memory and I/O ports are required	It consists of a **processor** in addition to its internal memory and I/O components
The circuit is **large** due to the addition of external components	The circuit is **smaller** due to the internally available components
It works **slowly**, as each operation requires communication with external components	It works **faster** as the communication is quick because of the components present internally
It is **complex**, with a large number of instructions	It is **simple** with few instructions
Its power consumption is **high**, so it cannot work on stored power devices	It has **low** power consumption. Hence, it works on stored power batteries
The cost of the entire system is **high**	The cost of the entire system is **low**
Examples: **INTEL 8085 AND 8086**	Examples: **Altera, INTEL, NEC, Panasonic**, etc





Microcontroller

ARDUINO

WHAT IS ARDUINO?

- It is an open-source electronics platform based on easy-to-use hardware and software
- Equipped with sets of digital or analog input output pins
- Converts input in fingerprint or sensor to an output (A light bulb/motor)
- Arudino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online

Arduino are three types :

Arduino UNO(R3)

Arduino NANO

Arduino MEGA

ARDUINO UNO (R3)

- The Arduino Uno (Rev 3) is one of the most widely used and beginner-friendly Arduino boards.
- It is based on the ATmega328P microcontroller and has 14 digital input/output pins , 6 analog input pins, a 16 MHz quartz crystal oscillator, a USB connection for programming, and a power jack.

- It is a great choice for beginners due to its simplicity and compatibility with a wide range of shields and sensors.
- It is often used for prototyping, simple robotics, and various DIY projects.

ATmega328P Microcontroller

- It is the heart of the Arduino Uno
- It is a microcontroller chip that contains the central processing unit (CPU) responsible for executing instructions and controlling all the functions of the Arduino
- It has built-in memory (flash memory for program storage and SRAM for data storage) and various hardware peripherals, making it capable of processing and managing inputs and outputs

Digital Input/Output Pins (14)

- These are pins on the Arduino Uno that can be used for both input and output operations.
- They can be configured in your program to either read digital signals (HIGH or LOW) or output digital signals (provide voltage or not).
- These pins are often used for connecting and controlling various digital devices like LEDs, switches, sensors, and more.
- Analog Input Pins (6) :-

➢ Analog input pins on the Arduino Uno are used for reading analog signals, such as varying voltage levels.

➢ They can measure values between 0 (0V) and 1023 (5V) using the analog-to-digital converter (ADC).

➢ These pins are useful for interfacing with analog sensors like temperature sensors, light sensors, potentiometers, and more.

16 MHz Quartz Crystal

- The 16 MHz quartz crystal is a timing component that provides the Arduino Uno with an accurate and stable clock signal.
- This clock signal is essential for the microcontroller's timing and synchronization of operations.
- It ensures that the Arduino Uno can execute instructions and control peripherals at a precise rate

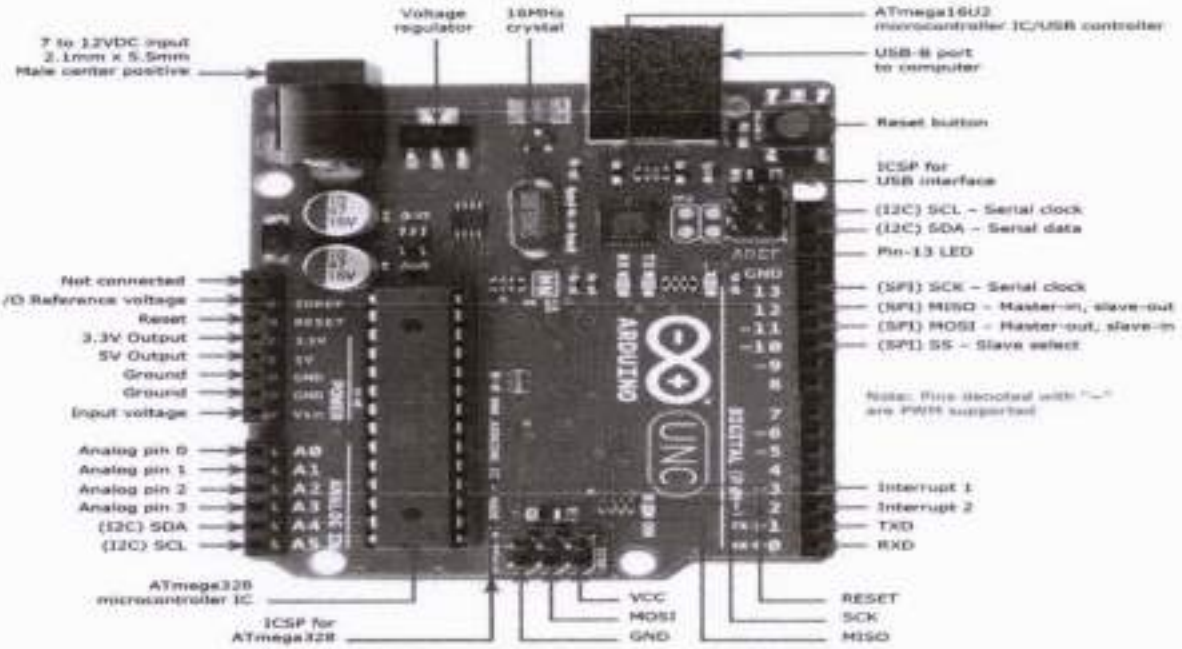
USB Connection for Programming

- The USB connection on the Arduino Uno is used for programming the board and for serial communication between the Arduino and a computer.
- It allows you to upload your Arduino sketches (programs) from your computer to the Arduino using the Arduino IDE (Integrated Development Environment) or other compatible programming environments.

Power Jack

- The power jack on the Arduino Uno provides external power to the board. It accepts a voltage input between 7V and 12V (usually supplied by an external adapter).

ARDUINO UNO PIN DIAGRAM



COMMUNICATION PROTOCOLS

Communication protocols in embedded systems are essential for enabling devices to exchange data and instructions efficiently and reliably. Here's a brief description of some common communication protocols used in embedded systems:

1. UART (Universal Asynchronous Receiver/Transmitter):

- UART is a popular serial communication protocol used for point-to-point communication between devices. It transmits data asynchronously, meaning data is transmitted without a clock signal, making it relatively simple and widely supported in embedded systems.

2. SPI (Serial Peripheral Interface):

- SPI is a synchronous serial communication protocol commonly used for communication between microcontrollers and peripheral devices, such as sensors, displays, and memory chips. It uses separate lines for data transmission (MOSI - Master Out Slave In, MISO - Master In Slave Out) and a clock signal (SCLK) for synchronization.

3. I2C (Inter-Integrated Circuit):

- I2C is another synchronous serial communication protocol used for connecting multiple devices on a bus. It requires only two wires (SDA - Serial Data, SCL - Serial Clock), making it suitable for connecting various sensors, EEPROMs, and other peripherals in embedded systems.

4. CAN (Controller Area Network):

- CAN is a robust serial communication protocol designed for high-speed communication and real-time control in automotive and industrial applications. It supports message prioritization, error detection, and fault tolerance, making it suitable for applications requiring reliability and fault tolerance.

5. Ethernet:

- Ethernet is a widely used communication protocol for connecting embedded systems to local area networks (LANs) and the internet. It enables high-speed data transmission and networking capabilities in embedded devices, allowing for remote monitoring, control, and data exchange.

6. Bluetooth and Wi-Fi:

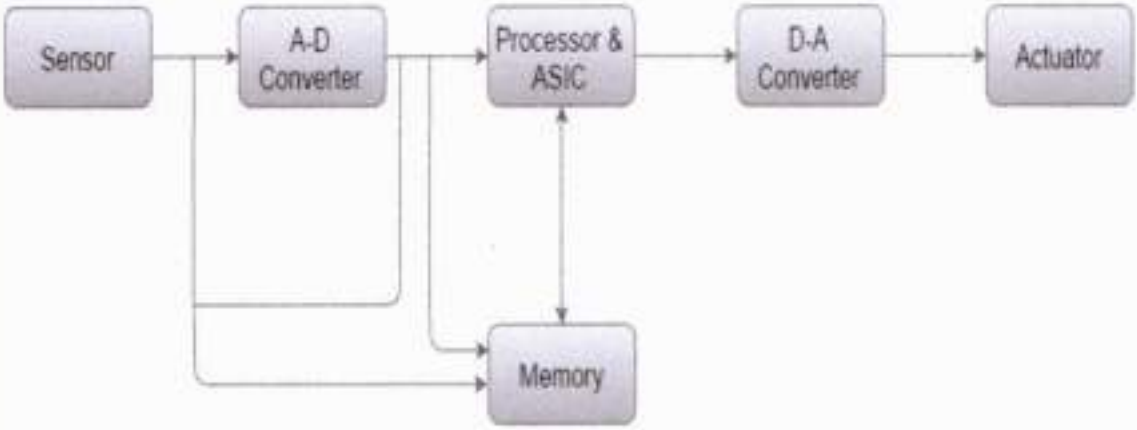
Bluetooth and Wi-Fi are wireless communication protocols commonly used in embedded systems for short-range and long-range wireless communication, respectively. They enable connectivity to smartphones, tablets, and other devices, facilitating wireless data exchange, remote control, and internet connectivity in embedded systems

EMBEDDED SYSTEMS

- Embedded means something that is attached to another thing. An embedded system can be thought of as a computer hardware system having software embedded in it.
- An embedded system can be an independent system or it can be a part of a large system.
- An embedded system is a microcontroller or microprocessor based system which is designed to perform a specific task.
- Embedded Systems consist of three parts:
- 1. A Hardware
- 2. A Software
- 3. Real Time Operating System (RTOS)

Basic Structure of an Embedded System

The following illustration shows the basic structure of an embedded system –

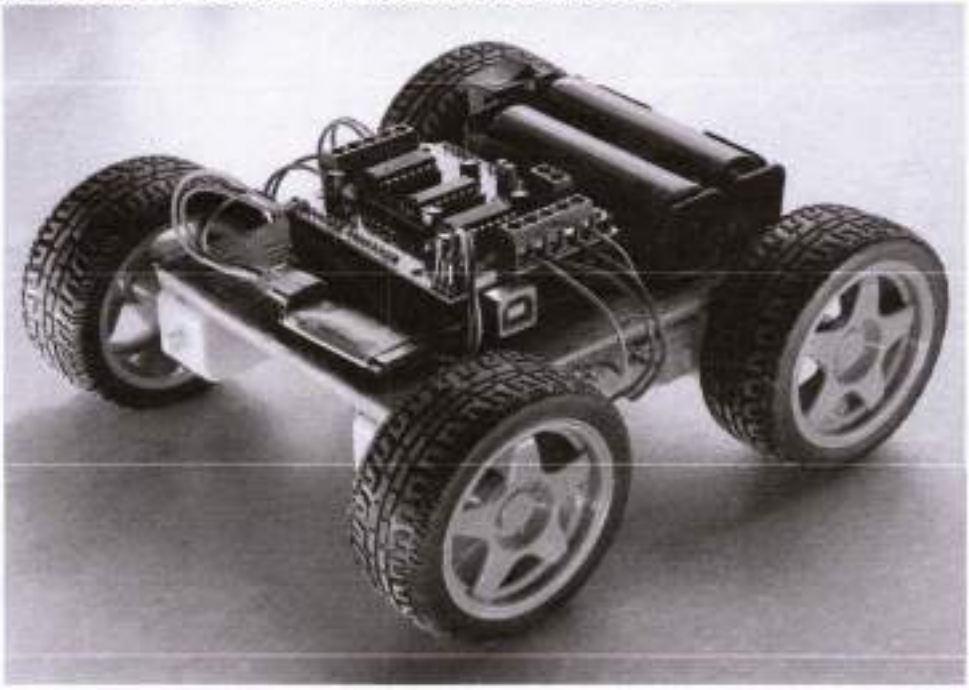


- Sensor – It measures the physical quantity and converts it to an electrical signal which can be read by an observer or by any electronic instrument like an A2D converter. A sensor stores the measured quantity to the memory.
- A-D Converter – An analog-to-digital converter converts the analog signal sent by the sensor into a digital signal.
- Processor & ASICs – Processors process the data to measure the output and store it to the memory.
- D-A Converter – A digital-to-analog converter converts the digital data fed by the processor to analog data
- Actuator – An actuator compares the output given by the D-A Converter to the actual output stored in it and stores the approved output.

APPLICATION

- Real time computing
- Automation
- Telecommunication
- Avionics
- Global positioning system
- Control system

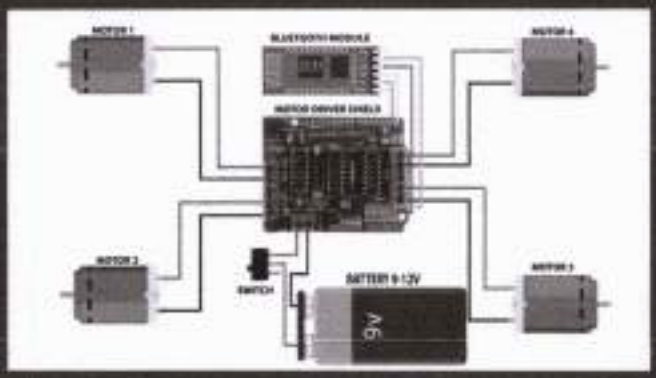
COURSE PROJECT: BLUETTOTH CONTROLLED CAR



Introduction

Bluetooth controlled car is a robot which is built using atmega8 microcontroller in which serial communication is done via bluetooth and programming and programming is done in embedded c language.

Schematic Diagram



How to setup

1. Connect the wires of motors with M1, M2, M3, M4 pins of motor driver.
2. Connect the transmitter pin of Bluetooth module to the receiver pin (0) of motor driver and connect the receiver pin of Bluetooth module to the transmitter pin (1) of motor driver.
3. Connect the VCC and GND of Bluetooth module to the VCC and GND of motor driver.
4. Power the motor driver M+ pin and GND using 9V battery.
5. Connect the GND, VCC and signal pin of the servo motor to the corresponding GND, VCC and signal pin of the motor driver.
6. Compile the program to the Arduino board using USB cable.
7. Attach the Arduino with the motor driver.
8. Connect the Bluetooth with application.

CODE FOR BLUETOOTH CONTROLLED CAR

```
char t;


void setup() {
pinMode(13,OUTPUT);   //left motors  forward
pinMode(12,OUTPUT);   //left motors reverse
pinMode(11,OUTPUT);   //right  motors forward
pinMode(10,OUTPUT);   //right motors reverse
pinMode(9,OUTPUT);   //Led
```

```
Serial.begin(9600);


}

void loop() {
if(Serial.available()){
  t = Serial.read();
  Serial.println(t);
}

if(t == 'F'){            //move  forward(all motors rotate in forward direction)
  digitalWrite(13,HIGH);
  digitalWrite(11,HIGH);
}

else if(t == 'B'){      //move reverse (all  motors rotate in reverse direction)
  digitalWrite(12,HIGH);
  digitalWrite(10,HIGH);
}

else if(t == 'L'){      //turn right (left side motors rotate in forward direction,  right side motors doesn't
rotate)
  digitalWrite(11,HIGH);
}

else  if(t == 'R'){      //turn left (right side motors rotate in forward direction, left  side motors doesn't
rotate)
  digitalWrite(13,HIGH);
}

else if(t ==  'W'){    //turn led on or off)
  digitalWrite(9,HIGH);
}
else if(t == 'w'){
```

```
  digitalWrite(9,LOW);
}

else if(t == 'S'){      //STOP (all motors stop)
  digitalWrite(13,LOW);
  digitalWrite(12,LOW);
  digitalWrite(11,LOW);
  digitalWrite(10,LOW);
}
delay(100);
}
```

CONCLUSION

In conclusion, this internship has provided a comprehensive insight into the realm of embedded systems and electronic components, laying a strong foundation in both analog and digital electronics. Throughout the internship, we delved into the fundamentals of analog and digital sensors, exploring their applications in voltage and current sensing. The exposure to microprocessors and microcontrollers, particularly Arduino, has equipped us with practical skills in programming and interfacing, essential for designing embedded systems.

Moreover, the exploration of communication protocols has broadened our understanding of how devices communicate and interact within embedded systems. The practical application of these protocols was demonstrated through the development of a Bluetooth-controlled car, showcasing the integration of various electronic components and sensors to achieve a functional embedded system.

Overall, this internship has been invaluable in bridging theoretical knowledge with hands-on experience, preparing us for the challenges and opportunities in the field of electrical and electronics engineering. We are grateful for the guidance and mentorship provided throughout this journey, and we look forward to applying our newfound skills and knowledge in future endeavors.

REFERENCE

•https://nesttech.com/

•https://play.google.com/store/apps/details?id=braulio.calle.bluetoothRCcontroller

•NeST Cyber Campus

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COLLEGE OF ENGINEERING & TECHNOLOGY

(PROMOTED BY SREE BHAKTHI SAMVARDHINI YOGAM, KANNUR)
CHALAKKODE P.O., PAYYANUR, KANNUR-670307, KERALA

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
INTERNSHIP DETAILS
ACADEMIC YEAR: (2022-2023)

SI NO	NAME	INDUSTRY	DURATION
1	ABHINAV C.	TORC INFOTECH PRIVATE LIMITED	7days 14.10.2022-21.10.2022
2	ASWATHI P. P.	TORC INFOTECH PRIVATE LIMITED	7days 14.10.2022-21.10.2022
3	HRUDHUL RAGH	TORC INFOTECH PRIVATE LIMITED	7days 14.10.2022-21.10.2022

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TO WHOMSOEVER IT MAY CONCERN

This is to certify that ABHINAV C, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found him a sincere, honest, hardworking, and dedicated student with a professional attitude. He is proactive and is constantly looking to improve his skill set. We also observed that he is skilled at his job.

We wish him every success in all future endeavours.

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We wish her every success in all future endeavours.

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This is to certify that HRUDHUL RAGH, a student of SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR, has completed 7 days of Internship Training in ARTIFICIAL INTELLIGENCE with INDUSTRIAL 4.0 from October 14, 2022 at TORC INFOTECH PVT LTD, Kochi. During this internship period, we found him a sincere, honest, hardworking, and dedicated student with a professional attitude. He is proactive and is constantly looking to improve his skill set. We also observed that he is skilled at his job.

We wish him every success in all future endeavours.

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(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

INTERNSHIP TRAINING

AT

TORC INFOTECH PVT LTD

Submitted in partial fulfillment for the award of the degree of Bachelor of Technology

Of

APJ Abdul Kalam Technological University

Submitted by

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

BONAFIED CERTIFICATE

This is to certify that Industrial Training at "**TORC Infotech PVT LTD "** is a bonafide record of the worddone by **ABHINAV C, ASWATHI PP, HRUDHUL RAGH** 5th semester **DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING** towards the partial fulfillment for the award of the degree in **Bachelor of Technology** by APJ Abdul Kalam Technological University

Faculty Advisor

Head of the Department

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ACKNOWLEDGEMENT

"It is not possible to prepare a project report without the assistance & Encouragement of other people. This one is certainly no exception."

First of all we would like to thank the almighty, whose blessings have made our endeavor a success.

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INTRODUCTION

The Artificial Intelligence (AI) stands as the cornerstone of modern technological advancements, revolutionizing industries and reshaping the way we interact with machines. Its inception dates back to the mid-20th century, but it's within recent decades that AI has emerged as a driving force behind innovation, permeating various aspects of our daily lives. From self-driving cars to personalized recommendations on streaming platforms, AI has become omnipresent, shaping the future of human-machine interactions.

The essence of AI lies in its ability to imbue machines with cognitive abilities akin to human intelligence, enabling them to perceive their environment, learn from data, reason, and make decisions autonomously. This internship serves as a gateway into the realm of AI, delving deep into its foundational principles and applications to empower participants with a profound understanding of its intricacies.

Throughout this internship, participants embark on a journey to unravel the mysteries of AI, dissecting its underlying theories and methodologies. By exploring concepts such as machine learning, neural networks, natural language processing, and computer vision, participants gain insight into the inner workings of intelligent systems. They witness first-hand how algorithms evolve through training on vast datasets, adapting to complex patterns and making predictions with remarkable accuracy.

Moreover, this internship extends beyond theoretical discourse, offering practical experience in implementing AI algorithms using programming languages like Python and leveraging state-of-the-art frameworks such as Tensor Flow and PyTorch. Participants engage in hands-on projects, tackling real-world problems and honing their skills in data pre-processing, model training, and performance evaluation.

As AI continues to proliferate across industries, from healthcare to finance to entertainment, understanding its fundamentals becomes increasingly crucial.

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INTENT OF LEARNING AI

The primary objective of this internship was meticulously crafted to serve as a robust foundation upon which participants could embark on their journey into the dynamic world of Artificial Intelligence (AI). At its core, the internship sought to instill a deep understanding of the foundational principles that underpin AI's remarkable capabilities. Through a structured curriculum, participants were guided through the intricate realms of machine learning, neural networks, natural language processing (NLP), and computer vision, each representing a crucial facet of AI's expansive landscape.

Machine learning, the cornerstone of AI, was explored in depth, unraveling the mechanisms through which algorithms learn from data to identify patterns, make predictions, and drive decision-making processes. Participants delved into supervised, unsupervised, and reinforcement learning paradigms, grasping the nuances of algorithmic optimization and model evaluation.

Neural networks emerged as a focal point of study, offering participants insight into the computational structures inspired by the human brain. Through hands- on exercises, participants constructed neural networks of varying complexity, exploring architectures such as convolutional neural networks (CNNs) for image recognition and recurrent neural networks (RNNs) for sequential data analysis.

Natural language processing (NLP) served as a gateway to understanding how machines interpret and generate human language. Participants ventured into the realms of sentiment analysis, text classification, and language generation, gaining a profound appreciation for the challenges and opportunities inherent in processing linguistic data.

The captivating field of computer vision captivated participants as they delved into techniques for extracting meaningful insights from visual data. From object detection to image segmentation, participants honed their skills in leveraging convolutional

REVIEWING THE BASIC LITERATURES

The Literature Review phase of the internship served as the cornerstone for participants to delve into the rich tapestry of knowledge that underpins the field of Artificial Intelligence (AI). Through a comprehensive exploration of seminal works, contemporary research, and futuristic projections, participants embarked on a journey through the annals of AI history, tracing its evolution from theoretical conjecture to practical application.

The literature review commenced with an exploration of seminal works, delving into foundational texts that laid the groundwork for modern AI. Participants immersed themselves in the pioneering research of luminaries such as Alan Turing, John McCarthy, and Marvin Minsky, whose ground breaking contributions paved the way for the emergence of AI as a distinct discipline. By dissecting seminal papers and seminal concepts such as the Turing Test, participants gained insight into the conceptual underpinnings of AI and its philosophical implications.

As the literature review progressed, participants ventured into the realm of current trends, navigating the intricate landscape of contemporary AI research. From deep learning and reinforcement learning to generative adversarial networks (GANs) and transfer learning, participants surveyed the latest advancements that are reshaping the AI landscape. By examining recent publications, conference proceedings, and industry reports, participants gained a nuanced understanding of the state-of-the-art methodologies and applications driving AI innovation.

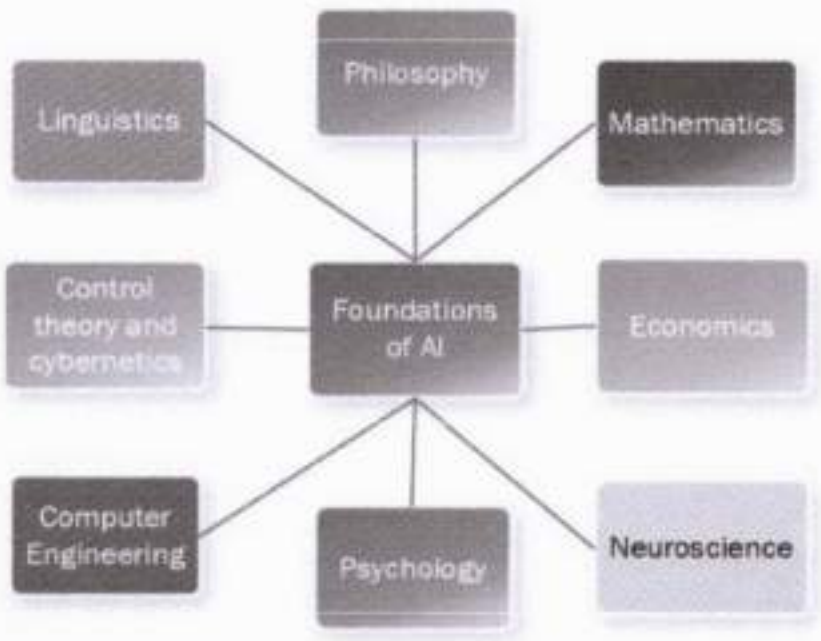
Furthermore, the literature review phase provided a glimpse into the future prospects of AI, offering participants a tantalizing glimpse into the possibilities that lie ahead. From the quest for artificial general intelligence (AGI) to the ethical implications of autonomous systems, participants explored the frontiers of AI research and speculation. By engaging with speculative works and thought-provoking essays, participants grappled with the profound questions surrounding AI's impact on society, ethics, and the nature of intelligence itself.

Throughout the literature review phase, participants synthesized a wealth of knowledge, weaving together insights from diverse sources to construct a coherent narrative of AI's past, present, and future.

THEORETICAL FOUNDATIONS OF AI

Following the literature review phase, the internship transitioned into an immersive exploration of theoretical learning, wherein participants delved deep into the intricate concepts that form the bedrock of Artificial Intelligence (AI). Theoretical learning served as a crucial juncture for participants to grasp the underlying principles of AI methodologies, with a particular focus on supervised learning, unsupervised learning, reinforcement learning, and deep learning. These foundational concepts provided participants with a comprehensive framework for understanding the diverse array of AI algorithms and techniques employed in solving real-world problems.

During this phase, participants embarked on a systematic journey through the theoretical underpinnings of supervised learning, wherein algorithms are trained on labelled datasets to infer a mapping between input and output variables. Through rigorous study and hands-on exercises, participants gained a nuanced understanding of regression, classification, and ensemble methods, unravelling the mathematical intricacies that govern algorithmic optimization and model evaluation.



PRACTICAL IMPLEMENTATION TECHNIQUES

With a solid theoretical foundation in place, participants transitioned into the practical implementation phase, where they embarked on transforming abstract concepts into tangible solutions. The implementation of basic AI ideas served as a crucial bridge between theory and application, enabling participants to harness their newfound knowledge to tackle real-world challenges.

During this phase, participants engaged in hands-on exercises and projects aimed at applying fundamental AI concepts in practical settings. They leveraged programming languages such as Python and R to implement algorithms and develop prototypes, gaining invaluable experience in translating theoretical knowledge into functional code.

Supervised learning algorithms were implemented to build predictive models for tasks such as regression and classification. Participants worked with datasets, pre-processing them to ensure data quality and integrity, before training models using algorithms such as linear regression, decision trees, and support vector machines. Through iterative experimentation and model tuning, participants honed their skills in selecting appropriate algorithms and optimizing model performance.

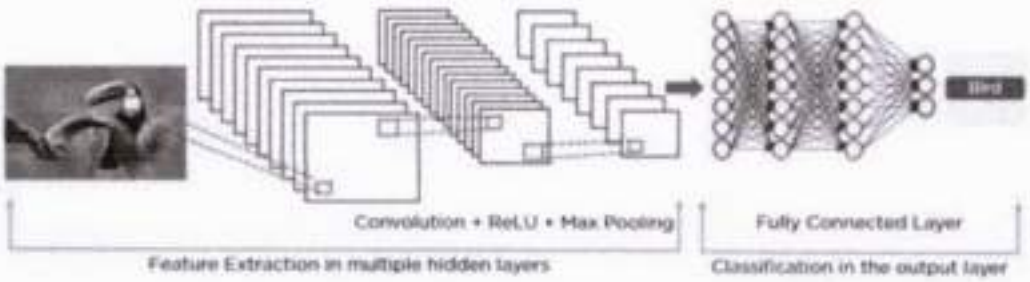
In parallel, participants explored the realm of unsupervised learning, where they applied clustering algorithms such as K-means and hierarchical clustering to identify patterns and structures within data. They also delved into dimensionality reduction techniques such as principal component analysis (PCA) and t-distributed stochastic neighbour embedding (t-SNE), gaining insights into feature selection and visualization strategies.

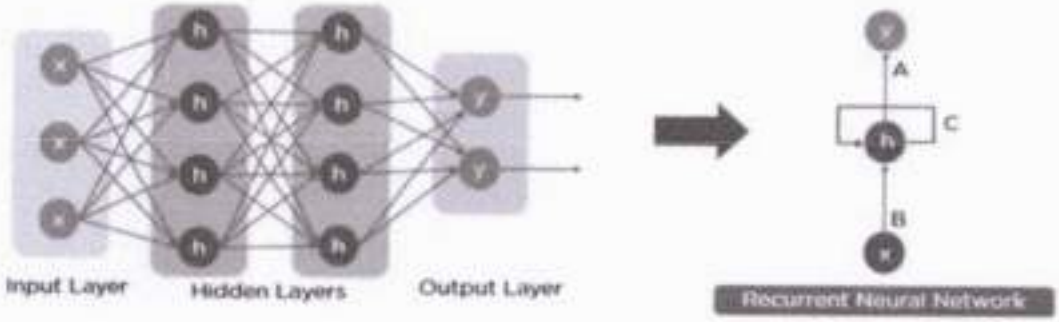
Furthermore, participants ventured into the realm of reinforcement learning, implementing algorithms such as Q-learning and deep Q-networks to train agents in simulated environments. By designing reward structures and defining action policies, participants explored the dynamics of agent-environment interactions, gaining hands-on experience in reinforcement learning principles and methodologies.

Deep learning emerged as a focal point of implementation, with participants leveraging neural network architectures such as convolutional neural networks (CNNs) and recurrent neural networks (RNNs) to tackle tasks such as image recognition, natural language processing, and sequence prediction. Through projects ranging from image classification to text generation, participants gained practical insights into the capabilities and limitations of deep learning algorithms.

Overall, the implementation phase of the internship served as a testament to the

transformative power of AI, empowering participants to apply basic AI ideas to real-world problems. By bridging the gap between theory and practice, participants not only expanded their technical repertoire but also gained confidence in their ability to harness AI technologies to drive innovation and create impact.





TOOLS AND FRAMEWORK

During the Tool Familiarization phase, participants immersed themselves in a diverse array of AI frameworks and libraries, empowering them to harness the full potential of cutting-edge technologies in their AI endeavours. Tensor Flow, a widely-used open-source machine learning framework developed by Google, served as a cornerstone of exploration. Participants delved into Tensor Flow's versatile ecosystem, mastering its intuitive interface and leveraging its robust functionalities for building and deploying AI models across various domains.

In parallel, participants embarked on a journey through Keras, a high-level neural networks API written in Python and capable of running on top of Tensor Flow, Theano, or CNTK. With its user-friendly interface and seamless integration with Tensor Flow, Keras provided participants with a streamlined approach to prototyping and deploying deep learning models, enabling rapid experimentation and iteration.

PyTorch emerged as another pivotal tool in participants' toolkit, offering a dynamic and flexible platform for building and training neural networks. Known for its ease of use and Pythonic syntax, PyTorch appealed to participants seeking a more intuitive framework for implementing complex AI algorithms. Through hands-on exercises and projects, participants gained proficiency in PyTorch's tensor computations and autograd system, unlocking new possibilities in deep learning research and development.

Furthermore, participants explored scikit-learn, a versatile machine learning library built on NumPy, SciPy, and matplotlib, offering simple and efficient tools for data mining and analysis. With its extensive collection of algorithms for classification, regression, clustering, and dimensionality reduction, scikit- learn provided participants with a solid foundation for implementing traditional machine learning techniques and benchmarking model performance.

Through guided tutorials, practical exercises, and real-world projects, participants gained hands-on experience in utilizing these AI frameworks and libraries to tackle a myriad of AI challenges. From image classification and natural language processing to reinforcement learning and recommendation systems, participants leveraged these powerful tools to build and deploy AI models with confidence and proficiency.

APPLICATION DEVELOPMENT

The internship also involved developing AI-based applications in different domains, such as The Application Development phase of the internship marked a pivotal moment where theoretical knowledge and practical skills converged to create tangible solutions with real-world impact. Participants embarked on a journey to develop AI-based applications across diverse domains, ranging from image recognition and natural language processing to recommendation systems, thereby gaining invaluable insights into the vast potential of AI across industries.

In the domain of image recognition, participants leveraged deep learning techniques and frameworks such as Tensor Flow and PyTorch to develop sophisticated models capable of accurately identifying objects, scenes, and patterns within images. From classifying medical images for disease diagnosis to detecting objects in autonomous vehicles, participants explored the transformative potential of image recognition in healthcare, transportation, and beyond.

Natural language processing (NLP) emerged as another focal point of application development, with participants delving into tasks such as sentiment analysis, text summarization, and language translation. By harnessing pre- trained language models and neural network architectures, participants developed AI-powered chatbots, virtual assistants, and language understanding systems, paving the way for more intuitive human-computer interactions across various domains.

Furthermore, participants ventured into the realm of recommendation systems, leveraging collaborative filtering, content-based filtering, and hybrid approaches to personalize user experiences and drive engagement. By analyzing user preferences and historical data, participants developed recommendation algorithms capable of suggesting products, content, and services tailored to individual tastes and preferences, thereby enhancing customer satisfaction and retention.

Through hands-on projects and real-world applications, participants gained firsthand experience in navigating the complexities of AI development, from data collection and preprocessing to model training and deployment. They grappled with challenges such as data scarcity, model interpretability, and ethical considerations, gaining insights into the practical implications.

CONCLUSION

This basic AI internship has been transformative, providing participants with a comprehensive understanding of AI's foundational principles and practical applications. From exploring machine learning theories to mastering AI algorithm implementation, participants have developed a diverse skill set poised to navigate the evolving AI landscape. The structured approach of the internship, covering literature review, theoretical learning, practical implementation, and application development, has equipped participants with a holistic understanding of AI, empowering them to tackle real-world challenges across various domains.

Throughout the internship, participants engaged in hands-on projects and real- world applications, expanding their technical repertoire and honing problem- solving skills. This practical experience, coupled with insights into ethical considerations surrounding AI deployment, has prepared participants to make meaningful contributions to the field. As they embark on the next phase of their AI journey, participants carry a deep appreciation for AI's transformative potential and a commitment to leveraging technology for positive societal impact.

This internship underscores the significance of education and hands-on experience in shaping the future of AI. Armed with knowledge, skills, and experiences gained during the internship, participants are positioned to drive innovation and create positive change in the world. As AI continues to integrate into various aspects of society, the insights gleaned from this internship will serve as a solid foundation for participants to navigate AI's complexities and make impactful contributions to society's advancement.

REFERENCE

https://torcinfotech.com/ info@torcinfotech.com

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SREE NARAYANA GURU
COLLEGE OF ENGINEERING & TECHNOLOGY

(PROMOTED BY SREE BHAKTHI SAMVARDHINI YOGAM, KANNUR)
CHALAKKODE P.O., PAYYANUR, KANNUR–670307, KERALA

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
INTERNSHIP DETAILS
ACADEMIC YEAR: (2021-2022)

SI NO	NAME	INDUSTRY	DURATION
1	ASWANTH K V	Techmaghi LLP	6 days 17.11.2021-22.11.2021
2	NIDHIN RAJ P P	Techmaghi LLP	6 days 17.11.2021-22.11.2021
1	ANUSHA JYOTHI	IBAND TECHNOLOGIES	17 days 29.12.2021-14.01.2021
2	DEVI KEERTHANA T.P.	IBAND TECHNOLOGIES	17 days 29.12.2021-14.01.2021
3	VAISHNAV T. V.	IBAND TECHNOLOGIES	17 days 29.12.2021-14.01.2021
4	VISHAL K.	ZINDOT TECHNOLIGIES	11 days 5-11-2021-15-11-2021

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KANNUR

HOD(EEE)

ZINDOT TECHNOLOGIES

zindot.in

CERTIFICATE

This is to certify that

VISHAL-K

student of

SREE NARAYANA GURU COLLAGE OF ENGINEERING AND TECHNOLOGY

has completed 10 days internship training in **ROBOTICS** from 5th November 2021 at ZINDOT TECHNOLOGIES, Kochi. During this intern period, we found him/her a sincere, honest, hardworking, dedicated student with a professional attitude and very good professional knowledge.
We wish you every success in all future endeavours.

Date : 18 NOVEMBER 2021

Director
ZINDOT TECHNOLOGIES

ZINDOT TECHNOLOGIES KOCHI-682 034

iBAND
Technologies

14/01/2022

CERTIFICATE

This is to certify that Anusha jyothi , having the university register number SNC19EE001 , B Tech Electrical & Electronics Engineering student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed internship training program in ' Robotics & Embedded Systems' at IBAND Technologies, Kochi from 29/12/2021 to 14/01/2022

For IBAND Technologies

HR Manager

IBAND TECHNOLOGIES KOCHI

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This is to certify that Vaishnav T V, having the university register number : SNC19EE003 , B.Tech Electrical & Electronics Engineering student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed internship training program in ' Robotics & Embedded Systems' at IBAND Technologies, Kochi from 29/12/2021 to 14/01/2022.

For IBAND Technologies

HR Manager

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14/01/2022

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For IBAND Technologies

HR Manager

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KANNUR

TECHMAGHI

Industrial Training/Internship

Leela

Certificate

This is to certify that

Mr. P P Nidhinraj

of

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

has successfully completed **six days** Internship/ Industrial Training Programme organized by **Techmaghi LLP** in association with **Leela Electric Power Services Pvt Ltd** from **17th November 2021 to 22nd November 2021.**

During this period he gained training in the following areas:

- Introduction to Electrical System Design
- Major components and safety devices used in Electrical System Design
- Preparation of basic Schematic Drawings
- Steps involved in real-life Electrical System Design Projects
- Integration of Renewable Energy to Grids
- Onsite Training on Project Execution at commercial work sites like apartments, hospitals, commercial complexes, etc.
- Introduction to Electrical CADD

Deepak Rajan
Chief Executive Officer
Techmaghi LLP

Eldho Thomas
Chairman
Leela Electric Power Services Pvt. Ltd.

Dr. LEENA A. V.
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TECHMAGHI

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Leela

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Chief Executive Officer
Techmaghi LLP

Eldho Thomas
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING (2021)

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At

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Submitted in partial fulfillment for the award of the degree of

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Of

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This is to certify that Industrial Training at "Techmaghi LLP"is a bonafide record of the workdone by ASWANTH VALSAN M V, NIDHIN RAJ P P of 7th semester DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING towards the partial fulfillment for the award of the degree of Bachelor of Technology by APJ Abdul Kalam Technological University

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ACKNOWLEDGEMENT

"It is not possible to prepare a project report without the assistance & Encouragement of other people. This one is certainly no exception."

First of all we would like to thank the almighty, whose blessings have made our endeavor a success.

We are extremely grateful to our dear Principal, Dr. Suresan Pareth, for providing us all the facilities for the completion of this Industrial Training.

Also, we would like to express our boundless gratitude to Mr. Raveendran K, Head of the Department for her invaluable remarks and supervision.

With immense pleasure, we would like to express our heartiest gratitude to Ms.Archana C P the tutor and , whose timely inputs and suggestions were most valuable. We express our wholehearted warm thanks for her guidance during the work.

Moreover, we are grateful to each and every staff of the Electrical and Electronics dept.

Finally, we thank our parents and friends for their help during our endeavor.

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1.COMPANY PROFILE: Techmaghi LLP

Techmaghi LLP is a dynamic technology company dedicated to providing innovative solutions in the industry. Founded in 2000, we have quickly established ourselves as a trusted partner for businesses seeking cutting-edge technology services and products. With a focus on software skills, we are committed to delivering excellence and driving digital transformation for our clients. Techmaghi LLP collaborates with leading technology providers, industry partners, and academic institutions to stay at the forefront of technological innovation and deliver best-in-class solutions to our clients.

1.1 Mission and Vision

Mission Statement: At Techmaghi LLP, our mission is to "revolutionize the industry through innovation, collaboration, and exceptional customer service."
Vision. Serve the preservation of our planet by shaping and sharing technology solutions. 1 Business travel, employee commute and transmission and distribution losses

1.2 Core Values:

1. Innovation: We embrace creativity and continuously strive to develop innovative solutions that exceed our clients' expectations.
2. Integrity: We conduct business with honesty, transparency, and the highest ethical standards.
3. Collaboration: We believe in the power of collaboration and teamwork to achieve shared goals and deliver exceptional results.
4. Customer Focus: We are committed to understanding our clients' needs and providing personalized solutions that drive value and success.
5. Excellence: We pursue excellence in everything we do, setting high standards for quality, performance, and customer satisfaction.

1.3 Key Services/Products:

Software development, web design, IT consulting.

1.4 Key Technologies/Expertise:

Artificial intelligence, cloud computing, cyber security, All software skills.

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2.COURSE DETAILS

2.1 Introduction

Data science has become an integral part of decision-making processes in various industries, leveraging advanced computational techniques to extract insights from data. Python, with its versatile libraries such as NumPy, Pandas, Matplotlib, and Scikit-learn, has emerged as a preferred language for data science tasks due to its simplicity and robustness.
This report provides an overview of a data science project conducted using Python, outlining the methodologies, analyses, and findings.

2.2 Objectives

The primary objectives of this data science project were:
1. To explore and analyze a dataset to uncover patterns and insights.
2. To build predictive models for classification or regression tasks.
3. To communicate findings effectively through visualizations and reports.

2.3 Methodology

1. Data Preprocessing: The dataset was cleaned to handle missing values, outliers, and inconsistencies. Features were encoded or transformed as necessary.
2. Exploratory Data Analysis (EDA): Various statistical and visualization techniques were employed to understand the distributions, correlations, and trends within the data.
3. Feature Engineering: New features were created or existing features were modified to improve model performance.
4. Model Development: Several machine learning algorithms were trained and evaluated for the given task, using techniques such as cross-validation to assess their generalization performance.
5. Model Evaluation: The models were evaluated based on appropriate metrics, considering factors such as accuracy, precision, recall, and F1-score for classification tasks, and RMSE or MAE for regression tasks.
6. Model Optimization: Hyper parameter tuning and feature selection techniques were applied to optimize the models further.

2.4 Conclusion

Through this data science project, we have demonstrated the power of Python in handling and analyzing datasets. The insights gained from the analysis can aid decision-making processes and drive business outcomes. Continual refinement and optimization of models are essential for adapting to changing data and improving predictive accuracy.

2.5 Future Work

Future endeavors in this project could include:

1. Deployment of models into production environments.
2. Integration of real-time data streams for dynamic analysis.
3. Continuous monitoring and updating of models for improved performance.

By embracing the principles of data science and leveraging Python's capabilities, organizations can unlock valuable insights from their data, leading to informed decision-making and competitive advantage.

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- www.iBAND Technologies.in
- www.wikipedia.org

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1. INTRODUCTION

iBAND Technologies is a well established company with a bunch of dynamic experts, providing solutions in the field of Information and Communication Technologies. Our creative team spends to understand your business and plans out a mockup. Our experienced team follows a set come close to to make sure we give you the best design. Our designs are done keeping in mind your aim at viewers and your business purpose/vision. The team of iBAND Technologies comprises of IT engineers and marketing professionals that understand your business. Our people take great pride in delivering solutions to make a positive impact on our customer's business. iBand Technologies specializes in the development of innovative wearable devices aimed at enhancing human experiences through technology. Their product range includes smart watches, fitness trackers, and sleep monitoring devices, all designed to seamlessly integrate into users' daily lives.

Internship Objectives:

1. Gain hands-on experience in the development process of wearable devices.
2. Contribute to ongoing research projects in the R&D department.
3. Learn about the challenges and opportunities in the wearable technology industry.
4. Enhance technical skills in software and hardware development.

2. FEATURES

iBAND provides telephone recording list-call log with date-time, incoming-outgoing numbers, duration and more information. Ÿ Crystal clear voice recording for Incoming & Outgoing telephone calls. Ÿ Play list searching by date-time, Incoming -Out going numbers, Party name, Talk-time & more information. Ÿ Multiple-Format Recording Ÿ Multimedia Operations like rewind, forward, and replay Ÿ Single Unified interface to search and to listen Voice Logs

3. COMPUTER TELEPHONE INTEGRATED SYSTEMS

Computer Telephony Integration (CTI) is a technology that bridges the gap between computers and phone systems. Specifically, in call centers, CTI allows call center agents to make and receive voice calls directly within their desktop computer interface, eliminating the need for a physical desk phone

1. Implementation Considerations

- Compatibility assessment with existing telephony and computer systems
- Employee training and change management strategies
- Security and compliance considerations, including data encryption and regulatory compliance

2. Future Trends in CTI

- Integration with artificial intelligence (AI) and machine learning technologies
- Expansion of omnichannel communication capabilities
- Continued emphasis on data analytics and predictive insights

4 .COURSES OFFERED AT IBAND TECHNNOLOGIES

SERVICES

iBAND offer world-class service, friendly working relationships and excellent value for money. For establishing partnerships is a means to provide customized solutions that will help make company more productive and competitive. The aim is to bring extra value to your business through adopting world-class processes, technological innovations and a knowledge-driven collaborative approach.Strict control is maintained over quality with a Two Step quality check over outputs.

WEB APPLICATION

iBAND Technologies provides website, web-portal, and web-application development services to small and large enterprises alike. We leverage the best of technologies from J2EE to .NET to AJAX, in order to develop the best solutions for our clients - while minimizing the time and cost involved.We are well versed and experienced in developing customized E-commerce solutions using state of the art technologies like Zend Framework, Smarty Templates etc Be it a personal website or a large portal that is required, we carefully assess all your needs to deliver innovative and creative solutions, ensuring that you will be satisfied with the end-product.

Our Web Services includes:

- Content Management System .
- Banner Management System.
- Newsletter Management System
- E-Commerce: Shopping Cart & Payment Gateway .
- Custom Web Applications

TELECOM APPLICATION:

Every businessman believes that 80% their inquiry, order booking, payement

commitment and complaints are made over phone. These conversations are important for your business and you often require record calls. Our products provide an easy and prompt solution to manage the communication systems in each and every aspect of public as well as private sector iBAND Voice Logger records telephone calls in your PC. Many people think the voice logger as only a tapping device or

telephone recording device but in fact voice logger is used for keep records of important calls which helps to increase security, training purpose, decrease errors and improve service quality. Voice Logger records calls of your tele-marketing callers, trading agents, customer care and verification department. You can solve dispute and avoid communication gap with your customer. Moreover, you can reduce high bills by avoiding misuse of phone. Our products serves the purpose of different business segments including call centers, stock brokers, banks, hospitals, business enterprises, educational institutions and legal offices around the world. These products allow people to communicate with computers through phones thus opening up opportunities for different services. Implementing our products streamlines business processes, increases productivity and improves customer service.

MOBILE APP DEVOLEPMENT

At iBAND Technologies we have a passion for mobile app development and a strong marketing background. Our talented designers and programmers are the best in the industry and each have a keen eye for detail. We develop apps that build brand awareness, brand loyalty and make consumers fall in love with your business and products. From games to gadgets, our apps are full time marketing machines in the pockets of your target audience. Bring us your great idea or let us dream up a concept for you and together we can make it happen Not sure what you want... just know you need an app? No problem! Our team loves a challenge and can dream up an awesome app concept for your brand or business.

CUSTOM SOFTWARE DEVELOPMENT

In order to keep pace with the rapidly changing business world, it is necessary to transform and re-define existing applications and systems by leveraging newer technologies. If you are an IT products/services company looking for custom tools for your developers or IT personnel in order to optimize internal resources, we can help satisfy those requirements. At Infozign, we leverage the power of Eclipse and RCP to develop custom components to meet your requirements. These range from simple data entry applications to Domain Specific Languages and Model-Driven Application Tooling.

5 CONCLUSION

My internship experience at iBand Technologies has been invaluable in shaping my professional growth and providing me with practical insights into the dynamic world of technology and innovation. Throughout my time at iBand, I have had the opportunity to work alongside talented professionals, engage in challenging projects, and immerse myself in a vibrant and collaborative work environment.

One of the most significant takeaways from my internship at iBand Technologies is the enhancement of my technical skills. Through hands-on project assignments and access to cutting-edge technologies, I have gained proficiency in various tools, programming languages, and software platforms relevant to my field of study. The mentorship and guidance provided by experienced professionals have accelerated my learning curve and equipped me with practical knowledge that complements my academic background.

Moreover, my internship experience has fostered the development of essential soft skills, including communication, teamwork, and problem-solving. Engaging in collaborative projects and interacting with diverse teams has honed my ability to effectively communicate ideas, adapt to different work styles, and navigate complex challenges. These interpersonal skills are invaluable assets that will serve me well in my future academic and professional pursuits.

Beyond skill development, my internship at iBand Technologies has provided me with a firsthand glimpse into the inner workings of a tech-driven organization. I have gained insights into the product development lifecycle, project management methodologies, and the importance of innovation and adaptability in a competitive market landscape. Witnessing the dedication and passion of the iBand team has inspired me to pursue excellence and embrace a mindset of continuous learning and growth.

Looking ahead, I am excited to apply the knowledge and experiences gained during my internship at iBand Technologies to my academic studies and future career endeavors. The lessons learned and connections made during this internship will undoubtedly shape my trajectory as a technology professional and contribute to my long-term success.

In conclusion, I am immensely grateful for the opportunity to intern at iBand Technologies and for the support and mentorship provided by the entire team. My internship experience has been enriching, rewarding, and transformative, and I am confident that the skills and insights gained will serve as a solid foundation for my future aspirations in the field of technology.

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PAYYANUR, KANNUR

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

INDUSTRIAL TRAINING

At

ZINDOT TECHNOLOGY

KOCHI

Submitted in partial fulfillment for the award of the degree of

Bachelor of Technology

Of

APJ Abdul Kalam Technological University

Submitted by

VISHAL K

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
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PAYYANUR, KANNUR

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

BONAFIED CERTIFICATE

This is to certify that Industrial Training at "**ZINDOT TECHNOLOGY" KOCHI "** is a bonafide record of the work done by **VISHAL K** of 5th semester **DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING** towards the partial fulfillment for the award of the degree Of **Bachelor of Technology** by APJ Abdul Kalam Technological University

Faculty Advisor

HOD(EEE)

Head of the Department

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ACKNOWLEDGEMENT

"It is not possible to prepare a project report without the assistance & Encouragement of other people. This one is certainly no exception."

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Also, we would like to express our boundless gratitude to Mr. RAVEENDRAN K, Head of the Department for her invaluable remarks and supervision.

With immense pleasure, we would like to express our heartiest gratitude to Ms Archana C P , tutor and , whose timely inputs and suggestions were most valuable. We express our wholehearted warm thanks for her guidance during the work.

Moreover, we are grateful to each and every staff of the Electrical and Electronics dept.

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1 INTRODUCTION

Zindot Technologies, headquartered in the bustling city of Kochi, Kerala, stands as a testament to innovation and technological excellence. Established with a vision to pioneer advancements in software development, artificial intelligence, and robotics, Zindot has become synonymous with cutting-edge solutions and transformative technology. From its humble beginnings, Zindot has grown into a dynamic force in the technology sector, leveraging its expertise to address the complex challenges faced by businesses across diverse industries. With a focus on delivering value-driven solutions tailored to meet the unique needs of its clients, Zindot has earned a reputation for reliability, quality, and innovation. The success of Zindot can be attributed to its unwavering commitment to excellence and its ability to stay at the forefront of technological trends. By embracing emerging technologies and fostering a culture of continuous learning and innovation, Zindot remains agile and adaptable in an ever-evolving landscape. One of the key pillars of Zindot's success is its team of talented professionals, who bring a wealth of experience and expertise to the table. Comprising skilled engineers, visionary developers, data scientists, and seasoned researchers, the Zindot team is united by a shared passion for technology and a drive to make a meaningful impact. As Zindot continues to chart new territories and push the boundaries of innovation, its commitment to excellence remains unwavering. With a steadfast focus on delivering value, driving innovation, and making a positive impact, Zindot Technologies is poised to shape the future of technology and redefine the possibilities of tomorrow.

2 SERVICES, MISSION AND VISION

Zindot Technologies offers a comprehensive range of services aimed at driving innovation, solving complex problems, and delivering impactful solutions in the technology domain. Our core services include:

Software Development: We specialize in developing custom software solutions tailored to meet the unique needs and challenges of our clients across various industries.

Artificial Intelligence: Leveraging the power of AI, we create intelligent systems and applications that automate processes, optimize workflows, and unlock valuable insights from data.

Robotics: We design and implement robotic solutions for diverse applications, from industrial automation and autonomous vehicles to healthcare and consumer electronics.

Data Analytics: Our data analytics services empower organizations to harness the full potential of their data, enabling data-driven decision-making and strategic insights.

Consulting: We provide expert consulting services to help businesses navigate the complexities of technology adoption, digital transformation, and innovation strategy.

Mission:

Our mission at Zindot Technologies is to empower organizations to thrive in the digital age by leveraging cutting-edge technology and innovation. We are committed to delivering superior solutions that drive business growth, enhance efficiency, and create lasting value for our clients and partners. Through our relentless pursuit of excellence, integrity, and customer satisfaction, we strive to be a trusted partner and a catalyst for positive change in the technology landscape.

Vision:

Our vision at Zindot Technologies is to be a global leader in technological innovation, known for our pioneering solutions, unmatched expertise, and unwavering commitment to excellence.

3 OBJECTIVES:

1: Innovation:

Zindot Technologies aims to foster a culture of innovation, creativity, and continuous improvement. The company seeks to push the boundaries of technological advancement by exploring new ideas, experimenting with emerging technologies, and developing innovative solutions to address evolving challenges.

2: Customer Satisfaction:

Zindot Technologies is committed to delivering exceptional value and service to its clients. The company strives to understand and exceed customer expectations by providing high-quality solutions that meet their needs, solve their problems, and drive measurable outcomes.

3: Technology Leadership:

Zindot Technologies endeavors to maintain its position as a leader in the technology sector. The company aims to stay at the forefront of technological trends, advancements, and best practices, positioning itself as a trusted advisor and expert resource for clients and partners.

4: Employee Development:

Zindot Technologies recognizes the importance of its employees as the driving force behind its success. The company is dedicated to nurturing talent, fostering professional growth, and creating a supportive work environment where employees can thrive, innovate, and contribute their best.

5: Social Responsibility:

Zindot Technologies is committed to corporate social responsibility and ethical business practices. The company seeks to make a positive impact on society and the environment by supporting community initiatives, promoting diversity and inclusion, and conducting business in an ethical and sustainable manner.

6: Business Growth:

Zindot Technologies aims to achieve sustainable growth and profitability while maintaining financial stability and operational excellence. The company seeks opportunities forexpansion, diversification, and strategic partnerships to enhance its market presence and competitiveness.

4 INTERNSHIP TRAINING PROGRAM STRUCTURE

Zindot Technologies takes pride in offering a comprehensive and structured Internship Training Program designed to provide participants with hands-on experience, practical skills, and industry exposure. The program aims to bridge the gap between academic learning and real-world application, preparing interns for successful careers in the technology sector. The following outlines the key components and structure of the Internship Training Program at Zindot Technologies: The internship training program spanned over 10 days and comprised a blend of theoretical sessions, hands-on workshops, and project work. The curriculum was designed to cover key concepts in robotics, including robot kinematics, and machine learning techniques.

6 TECHNICAL WORKSHOPS AND SESSIONS

Technical workshops were conducted by industry experts to familiarize students with robotics hardware and software platforms. Topics covered included ROS (Robot Operating System), sensor integration, motion planning, and robot simulation tools. Technical workshops at Zindot Technologies were led by industry experts to acquaint students with robotics hardware and software platforms. These sessions delved into crucial topics such as ROS (Robot Operating System), sensor integration, motion planning, and robot simulation tools. Through hands-on demonstrations and interactive learning, students gained practical insights into the intricacies of robotic systems, preparing them for real-world applications. The workshops provided a solid foundation for students to understand the complexities of robotics technology and equipped them with the skills necessary to tackle challenges in this dynamic field.

5 ROBOTICS IN INDUSTRY: TRENDS AND APPLICATIONS

Students were introduced to the latest trends and applications of robotics in various industries, including manufacturing, healthcare, agriculture, and logistics. Emphasis was placed on understanding the role of robotics in improving efficiency, safety, and productivity in diverse settings. Robotics has emerged as a transformative force across various industries, revolutionizing traditional processes and unlocking new possibilities. In manufacturing, robotics automation enhances efficiency and precision, leading to increased productivity and cost savings. In healthcare, surgical robots enable minimally invasive procedures, improving patient outcomes and reducing recovery times. Logistics and warehousing benefit from robotic systems for inventory management and order fulfillment, streamlining operations and enhancing supply chain efficiency. Agriculture embraces robotics for tasks like precision farming and autonomous harvesting, optimizing crop yields and resource utilization. As technology advances, trends like collaborative robotics, artificial intelligence, and internet of things (IoT) integration are shaping the future of robotics, paving the way for safer, smarter, and more versatile applications across industries. Robotics continues to redefine industry standards, driving innovation and ushering in a new era of automation and efficiency.

7 HANDS-ON PROJECTS

During the internship at Zindot Technologies, students engaged in hands-on projects to translate theoretical concepts into tangible solutions. These projects encompassed designing and programming robotic arms for pick-and-place tasks, leveraging advanced algorithms for autonomous navigation via SLAM (Simultaneous Localization and Mapping), and implementing computer vision techniques for object detection. Through these immersive experiences, students honed their problem-solving skills, enhanced their understanding of robotics principles, and gained valuable practical expertise. Working collaboratively in project teams, students applied creativity and innovation to overcome challenges, resulting in the development of functional prototypes and solutions with real-world applicability. These hands-on projects not only reinforced theoretical learning but also empowered students to explore the full potential of robotics technology in addressing complex challenges across diverse domains..

8. CHALLENGES AND LEARNING EXPERIENCES

During the program at Zindot Technologies, students faced a spectrum of challenges including debugging hardware issues, optimizing algorithms for real-time performance, and troubleshooting communication protocols. These hurdles served as invaluable learning opportunities, enabling students to hone their problem-solving skills and cultivate resilience in the face of technical obstacles. By grappling with complex problems firsthand, students gained practical insights into the intricacies of robotics technology and learned to adapt and innovate in dynamic environments. Moreover, these challenges fostered collaboration and teamwork as students collaborated to overcome obstacles, shared insights, and supported one another. Ultimately, the learning experiences derived from tackling these challenges equipped students with the skills, knowledge, and confidence needed to navigate the complexities of real-world technology projects and excel in their future careers.

9. CONCLUSION

The Internship Training Program on Robotics at Zindot Technologies has been an enriching and transformative experience. Through a blend of theoretical knowledge and practical application, we have gained a comprehensive understanding of robotics technologies and their diverse applications across industries. The hands-on projects and workshops offered invaluable opportunities to apply theoretical concepts in real-world scenarios, enhancing our problem-solving skills and technical proficiency. As we conclude the program, we feel well-equipped and confident to embark on future careers in the field of robotics, armed with the practical experience and knowledge acquired during our time at Zindot Technologies. We extend our heartfelt gratitude to the mentors, instructors, and the entire team at Zindot for their guidance, support, and encouragement throughout this journey.

10. RECOMMENDATIONS AND FUTURE DIRECTIONS

Looking ahead, expanding the internship program at Zindot Technologies to encompass advanced topics in robotics like humanoid robotics, swarm robotics, and reinforcement learning is highly recommended. This expansion would provide interns with exposure to cutting-edge technologies and deepen their understanding of emerging trends in the field. Moreover, forging partnerships with universities and research institutions can enrich the program by facilitating access to expertise, resources, and collaborative opportunities. These partnerships can foster a vibrant ecosystem of learning, innovation, and knowledge exchange, benefiting both interns and the broader robotics community. By embracing these recommendations and embracing a forward-thinking approach, Zindot Technologies can further elevate its internship program, cultivate future leaders in robotics, and contribute to the advancement of the field on a global scale.

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SREE NARAYANA GURU
COLLEGE OF ENGINEERING & TECHNOLOGY

(PROMOTED BY SREE BHAKTHI SAMVARDHINI YOGAM, KANNUR)
CHALAKKODE P.O., PAYYANUR, KANNUR-670307, KERALA

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
INTERNSHIP DETAILS

ACADEMIC YEAR (2019-2020)

SI NO	NAME	INDUSTRY	DURATION
1	AJAY P	Kerala State Electronics Development Corporation LTD.	8 days 24.07.2019 -31.07.2019
2	DEVIKA SATHEESH	Kerala State Electronics Development Corporation LTD.	8 days 24.07.2019 -31.07.2019
3	KIRAN RAJI VIJAYAN	Kerala State Electronics Development Corporation LTD.	8 days 24.07.2019 -31.07.2019
4	MUHAMMED NAZEEM M	Kerala State Electronics Development Corporation LTD.	8 days 24.07.2019 -31.07.2019
5	SANJAY GANGAN K	Kerala State Electronics Development Corporation LTD.	8 days 24.07.2019 -31.07.2019
6	SHINITH K V	Kerala State Electronics Development Corporation LTD.	8 days 24.07.2019 -31.07.2019
7	SIDHARTH P T	Kerala State Electronics Development Corporation LTD.	8 days 24.07.2019 -31.07.2019
8	VAISHNAV P	Kerala State Electronics Development Corporation LTD.	8 days 24.07.2019 -31.07.2019

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KANNUR

HOD (EEE)

ISO 9001 : 2015 Certified Company

KELTRON COMPONENT COMPLEX LTD

(A Govt *of* Kerala Undertaking) **GSTIN 32AAACK977781ZL**

KELTRON

Keltron Nagar
Kalllasscrl P.O.
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fax :(0497) 2781055
E-mail : hfo@keltroncomp.org
Website : www.keltroncomp.org

442 01.11.2019

CERTIFICATE

This is to certify that Mr. Vaishnav P (Reg. No. SNC16EE009), B.Tech (Electrical & Electronics Engineering) Student of Sree Narayana Guru College of Engineering & Technology has done Internship at Keltron Component Complex Ltd, under our guidance from 24 th July 2019-to 31st July 2019.

The student has shown keen interest and initiative during the training.

HoD (Personnel & Admin.)

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This is to certify that Mr. Sidharth P T (Reg. No. SNC16EE008), B.Tech (Electrical & Electronics Engineering) Student of Sree Narayana Guru College of Engineering & Technology has done Internship at Keltron Component Complex Ltd, under our guidance from 24 th July 2019-to 31st July 2019.

The student has shown keen interest and initiative during the training.

HoD (Personnel & Admin.)

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This is to certify that Mr. Shithin K V (Reg. No. SNC16EE007), B.Tech (Electrical & Electronics Engineering) Student of Sree Narayana Guru College of Engineering & Technology has done Internship at Keltron Component Complex Ltd, under our guidance from 24 th July 2019-to 31st July 2019.

The student has shown keen interest and initiative during the training.

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The student has shown keen interest and initiative during the training.

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This is to certify that Mr. Kiran Raji Vijayan (Reg. No. SNC16EE003), B.Tech (Electrical & Electronics Engineering) Student of Sree Narayana Guru College of Engineering & Technology has done Internship at Keltron Component Complex Ltd, under our guidance from 24.th July 2019-to 31st July 2019.

The student has shown keen interest and initiative during the training.

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PAYYANUR, KANNUR

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(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

Industrial Training

At

KERALA STATE ELECTRONICS DEVELOPMENT COORPERATION LIMITED

Calicut

Submitted in partial fulfillment for the award of the degree of

Bachelor of Technology

Of

APJ Abdul Kalam Technological University

Submitted by

AJAY P

DEVIKA SATHEESH

KIRAN RAJI VIJAYAN

MUHAMMED NAZEEM M

SANJAY GANGAN

SHINITH K.V

SIDDHARTH.P.T

VAISHNAV.P

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(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

BONAFIED CERTIFICATE

This is to certify that Industrial Training at "KERALA STATE ELECTRONICS DEVELOPMENT COORPERATION LIMITED" is a bonafide record of the workdone by **AJAY P , DEVIKA SATHEESH, KIRAN RAJI VIJAYAN, MUHAMMED NAZEEM,SANJAY GANGAN,SHINITH K.V,SIDDHARTH.P.T,VAISHNAV.P** of 7th semester **DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING** towards the partial fulfillment for the award of the degree pf **Bachelor of Technology** by APJ Abdul Kalam Technological University

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1.INTRODUCTION

It is a public sector company under kerala state government . its registered name is KERALA STATE ELECTRONICS DEVELOPMENT COORPERATION LIMITED. It is a multiproduct multicenter organization presents a range of LED lighting systems for various applications. These lighting systems are manufactured by Keltron Lighting Division, a state-of-the-art facility at Mudadi, Kozhikode, that integrates advanced LED sources, driver technologies, optics and design to produce world-class luminaries. The R&D effort has been focused on reducing energy consumption, extending life and maximizing illumination performance. Keltron Lighting solutions comprises Street Lights (20W-150W), High Mast/Mini Mast/Low Mast (6 Mt- 12Mt Height), All In One Solar Lights (AIO), LED Bulbs, LED Tube Lights, Emergency Lanterns etc.

KELTRON presents a range of LED lighting systems for various applications.These lighting systems are manufactured by Keltron Lighting Division, a state-of- the-art facility at Mudadi, Kozhikode, that integrates advanced LED sources, driver technologies, optics and design to produce world-class luminaries. The R&D effort has been focused on reducing energy consumption, extending life and maximizing illumination performance. Keltron Lighting solutions comprises Street Lights (20W-150W), High Mast/Mini Mast/Low Mast (6 Mt- 12Mt Height), All In One Solar Lights (AIO), LED Bulbs, LED Tube Lights, Emergency Lanterns etc.

2.HISTORY

In mid-1973, a small rented house at Peroorkada in Thiruvananthapuram witnessed the baby steps of what would over the next decade pave the way for Kerala to make its mark in the electronics sector - the formation of Kerala State Electronics Development Corporation Limited (Keltron)Established by Mr KPP NAMBIAR in 1973 .within 5 years had production centres all over state. Focused on transforming TRIVANDRUM capital of KERALA in to electronic hub of the country. Introduced LED lighting system to match the various applications . They set up a Keltrron lighting division at Mudadi , Calicut inKerala in 1981.

Over the years, Keltron Corporation has continuously enhanced and updated our systems to incorporate beneficial changes in technology. The addition of microprocessors and minicomputers as well as the development of highly specific software programs enable Keltron to offer the highest quality, most reliable life safety event management systems available today.

3. SERVICES, MISSION AND VISION

KELTRON is a multi-product organisation producing a wide range of products from discrete electronics components to complex equipment and systems.Keltron manufactures these products in six Production Centres and two subsidiary companies located in different parts of Kerala.The products are brought to the customers through Offices in Mumbai, Delhi, Kolkata, Chennai, Bangalore, Ahmedabad, Hyderabad and Trivandrum.

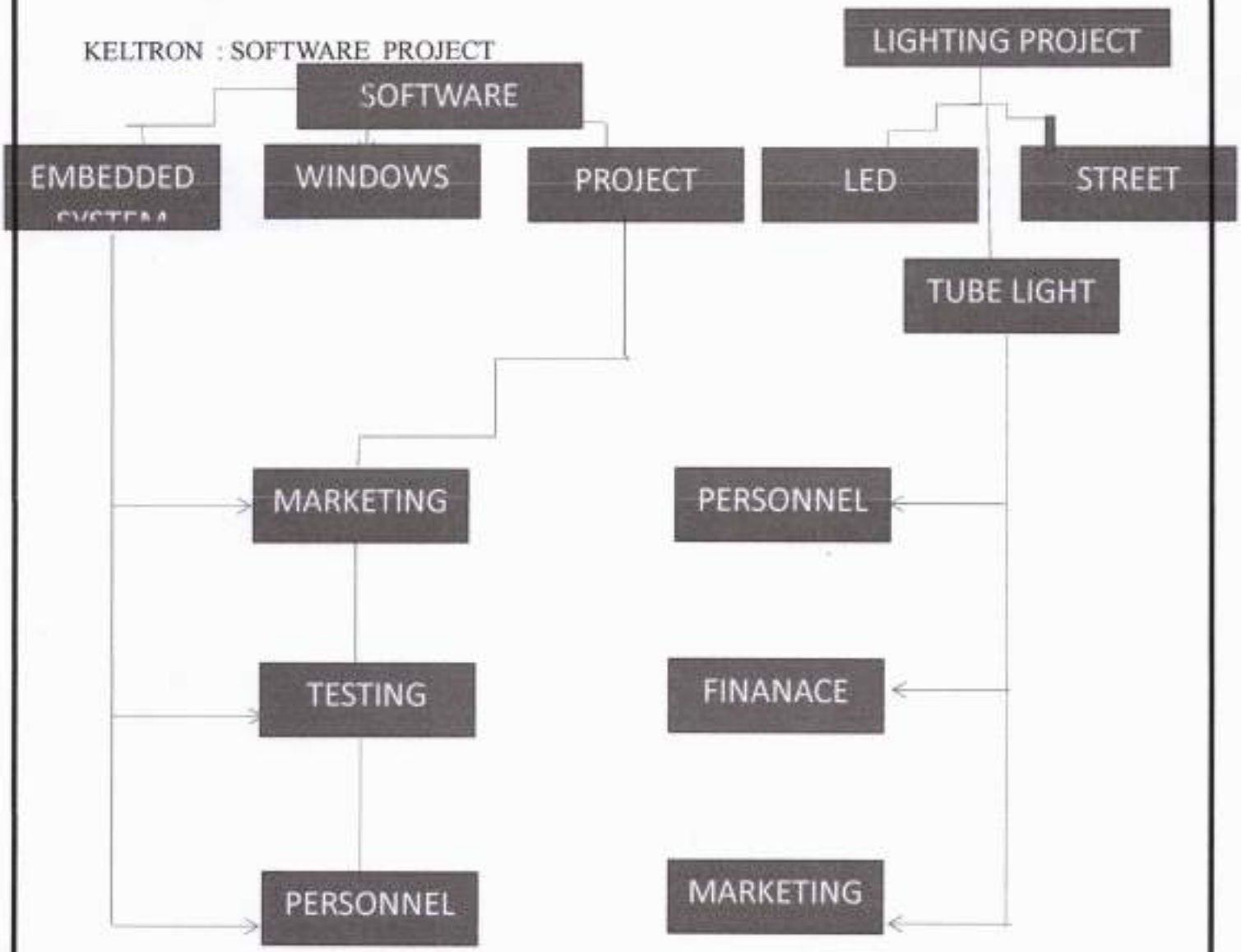
Mission: The mission of Keltron is to transform itself to one of the Navratna corporations of the country.

Vision: Adding Value to life and Industry

Major products are the mines for Indian Navy and various parts of rockets for ISRO. It includes all the basic electronic components Resistors , Capacitors ,diodes etc.

Provides services in the range of IT , Web designing and geo informatics, .Manufactured automatic traffic regulation system which were used in metro cities of India

4.COMPANY PROFILE



5.ORGANISATION SET UP

This section at Keltron is concerned with the testing of LED aspects and reverse counter. Earlier this section was involved in the work BSNL like manufacturing line circuit cards LCC. Now this unit concentrates in traffic equipment units. This section mainly consists of production of LED aspects. This section produces LCD cards such as LCD STOP, LCD WALK, LCD GREEN, and LCD AMBER. This section mainly consists of the testing of UPS, LED aspects etc. Testing process indicates the product have to be checked under specified conditions to meet the given specifications. For eg: in the testing of LED aspects, testing is done using a LUX meter to measure the brightness ie, the brightness can be controlled by varying the current. For amber, the optimum current preferred is 360mA and for green light is 140mA.

PROCESS:

In this process of production components of traffic signal equipment units like red, amber, green, walk, stop etc. are produced. In addition to this it involves production of reverse counter. In this

traffic signal equipment unit's time period is already set which counts reversely. The equipment's are arranged in rod noting the level of traffic in that junction. That is this set according to the intensity of crowd. raw materials are collected from private companies or government companies. About 90% of raw materials are from private limited companies. The raw materials include cards

like PCB, transformer, rear cover, IC's, LED, capacitor, transistor etc. These are purchased by

purchase department and primarily stored in main store. Later it was transformed into the substore. The various products by Keltron unit Calicut include Energy meter card manufactured and supplied to united electricals

LED tubelights for industrial and commercial purpose. LED street lights for panchayats and town area

6.OBJECTIVE

1.Establish good manufacturing practices in all production centres.

2. Upgradinginfrastructure and human resources development on a part with goal development indices

3. Establishing links with high profile institution like DRDO , VSSC ,NPOL to keep pace with technology.

7.PRODUCTS

Retrofit tube light, Street light , Solar street light , Bulb, Lantern , Down lights

FEATURES

- Low operational cost
- Low installation cost
- High luminance lighting
- Easy installatrion

DEPARTMENT

- Operation department
- Maintainance department
- Marketing department
- Purchase department
- Human resource department
- Customer care department

8.CONCLUSION

According to my experience I would like to say that this study was very beneficial for me, I found That the entire experience very rewarding. I could get a good idea about the history and profile of KERALA. The organization study has given me an insight into working of an organization engaged in the production of electronics equipment. A nation's future and its ability to compute in the global market depend greatly on how it generates new ideas and innovations in science and technology. Keltron has initiated steps to create acknowledge center that would catalyze the process of knowledge assimilation as well its dispensation. Keltron is one of the leading capacitors manufacturing companies in Kerala. It is an ISO 9001 certified functioning company. It has always been able to provide high quality products. It also has a super Research and Design section that help in providing capacitors according to the needs of the customers. It has committed set of technocrats who work tirelessly for the accomplishment of the goals of the company. The company provides employment for the handicapped people giving them high respect. It has a Very eco-friendly surrounding helping its employees to keep a cool atmosphere. Keltron after its bad play has found a stage where it can make profits. As an electronic goods manufacturer, it has a bright future ahead, a future belonging to innovation and simplicity of electronics

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(PROMOTED BY SREE BHAKTHI SAMVARDHINI YOGAM, KANNUR)
CHALAKKODE P.O., PAYYANUR, KANNUR–670307, KERALA

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
INTERNSHIP DETAILS

ACADEMIC YEAR (2018-2019)

SI NO	NAME	INDUSTRY	DURATION
1	AJMAL P V	KELTRON	1 Day 6-10-2018
2	AKSHAY M NAMBIAR,	KELTRON .	1 Day 6-10-2018
3	ANAGHA ASHOKAN	KELTRON	1 Day 6-10-2018
4	ANSAB K.P,	KELTRON .	1 Day 6-10-2018
5	ASWIN RAJ T	KELTRON	1 Day 6-10-2018
6	MUHAMMED IRSHAD	KELTRON	1 Day 6-10-2018
7	NIDHIN NANDAKUMAR	KELTRON .	1 Day 6-10-2018
8	NITHIN M	KELTRON	1 Day 6-10-2018
9	ROHITH V K	KELTRON .	1 Day 6-10-2018
10	SHARON P P	KELTRON	1 Day 6-10-2018
11	THASLEEM P T P	KELTRON	1 Day 6-10-2018
12	VISHNU UNNIKRISHNAN	KELTRON	1 Day 6-10-2018

HOD(EEE)

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ISO 9001 :2008 CERTIFIED
CIN : U74999KL1972SGC002450

KERALA STATE ELECTRONICS DEVELOPMENT CORPORATION LTD.
(A Government of Kerala Undertaking)

KELTRON®

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web : www.keltron.org

KLD/HR/2018-19/330

06-10-2018

CERTIFICATE

This is to certify that 7th semester B. Tech Students in Electrical & Electronics Engineering. **12** Students of Sree Narayana Guru College Of Engineering And Technology, Payyanur-670307, Kannur have undergone 1 day Industrial visit in our Unit on 06.10.2018

For KERALA STATE ELECTRONICS DEVELOPMENT CORPORATION Ltd

Subramaniam C.G

UNIT HEAD (KLD)

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

A STUDY ON KELTRON LIGHTING SCHEME,LIGHTING DIVISION ,KOYILANDI

WITH SPECIAL REFERENCE

TO

PRODUCTION DEPARTMENT

Submittedto
HOD (EEE DEPARTMENT)

Inaccordance to industrial visit

Submittedby

P P V AJMAL, AKSHAY M NAMBIAR, ANAGHA ASHOKAN ,ANSAB K.P, ASWIN RAJ T, MUHAMMED IRSHAD,NIDHIN NANDAKUMAR, NITHIN M, ROHIT V.K, SHARON P.P, THASLEEM P.T.P , VISHNU UNNIKRISHNAN

DEPARTMENT OF ELECTRICAL

AND ELECTRONICS ENGINEERING

SREE NARAYANA GURU COLLEGE OF ENGINEERING

TECHNOLOGY

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INTRODUCTION

An organization is a social arrangement which pursue collective goals, which controls its own performance, and which has a boundary separating it from its environment. Organization is the association formed by a group of people who worked individually or in groups to achieve common set of goals. Organizational studies are the study of individual and group dynamics in an organizational setting, as well as the nature of the organization themselves. Whenever people interact in an organization, many factors come to play. Organizational studies attempts to understand them and hence it is essential for B.TECH as it helps them to connect theory with practice.
As a part of the B.TECH an organizational study was conducted at "KELTRON LTD" to know about the functions of an entire organization and industrial training. The training and study was conducted for a period of 5 days. The aim of the study is to acquire practical knowledge of the application of management theories in the functioning of the organization and it also helps in understanding the organization structure and functions of various departments in the organization.

KELTRON COMPONENT COMPLEX LTD, KANNUR

Chapter1

INDUSTRY PROFILE

Electronics is one of the fastest expanding fields in research, application development and commercialization. Substantial growth in the field has occurred due to World War II, the invention of the transistor, the Space Program and now the computer industry. The research grants are high, jobs are available and there is much money to be made in areas related to electronics with the beginning of the "Information Superhighway" and Computerized Video coming to your home, it is hard to imagine that electronics will not continue to expand in future. Electronics is everywhere in our lives. India is the fifth largest economy in the World and has the largest GDP among emerging economics. Owing to its large population, the potential consumer demand is almost unlimited and consequently under appropriate condition, strong growth,performanee can be expected. In fact, the liberalization of the economy in 1991 has led to rapid growth. The electronics industry in particular is emerging as one of the most important industry in the Indian market. The electronic industry in India dates back to the early 1960s.Electronics was initially restricted to the development and maintenance of the fundamental communication system including Radio Broadcasting, Telephonic and Telegraphic Communication and Augmentation of Defense Capabilities. Until 1984, the electronic sector was primarily Government owned.1980s witnessed a rapid growth of the electronic industry due to sweeping economic chances, resulting in the liberalization and Globalization of the country.

Chapter 2

COMPANY PROFILE

Keltron Ltd, Kerala State Electronics Development Corporation Limited, is a public sector Electronics Company located in Kerala, a state in India. It is headquartered at the capital city of Kerala, Thiruvananthapuram. The company is under the direct control of the State government of Kerala. KELTRON's history is a saga of innovation in electronics. From being a pioneer in 1973, to the role of a trend-setter today, Keltron has been the catalysis for the development of electronics industry in Gods own country-Kerala.

Within five years of its inception, Keltron had set up a production centre in every district of the State. More than 5,000 people were engaged directly or indirectly by Keltron for the manufacture of electronic goods. The model of a State-owned electronics corporation was so successful that several other States in India followed suit - launching their own Electronics Corporations. The registered name of the company is Kerala State Electronics Development Corporation Limited (KSEDC Ltd). The name Keltron was coined from two words, Kerala Electronics and when it was necessary to use a small word in Telegrams referring to the company. Later, the same naming convention was adopted to name two other State owned Electronic Companies namely Meltron (Maharashtra Electronics) and Upton (UP Electronics).

The company is located in the northern parts of the state of Kerala about 15 kms from Kannur town at Keltron Nagar, Kalliassseri with over 30 years of experience in the design and manufacture Aluminium Electrolytic Capacitors and a product range extending from Miniature Radial Type to Large Can Screw Terminal type Capacitors. The manufacturing technology is constantly upgraded to meet the emerging trends in the capacitor field for delivering premium quality products.

The manufacturing facility at KCCL integrates the state of the art sophisticated automatic machinery imported from Japan, Italy, and Taiwan. It has the capacity to produce Ultra Miniature, Standard and High Reliability Radial Lead Type Capacitors, Axial Lead Type Capacitors, Snap-in Terminal type capacitors, Screw Terminal type Capacitors and AC Motor Start Capacitors. The R&D center of the company has the recognition of the department of Scientific & Industrial Research, Ministry of Science & Technology, Govt of India. KCCL is also a professional manufacturer of Low Voltage and High Voltage formed Aluminium Foils required for Aluminium Electrolytic Capacitors. This in-house forming plant supplies wide variety of formed foils required for the capacitor division

THE AMALGAMATION

In the year 2008-09 the company has undergone a transformation both structurally and functionally. The Government of Kerala sanctioned on 27-05-2008 the merger of four subsidiaries of Kerala State Electronics Development Co-operation Ltd (KSEDC) at kannur via, Keltron Resistors Ltd (KRL),Keltron Magnetic Ltd (KML),Keltron Crystals Ltd(KCL),and Keltron Component Complex Ltd(KCCL) into one company. The amalgamated company was to function under the name, Keltron Component Complex Ltd (KCCL) after the completion of the procedural formalities of merger. only amalgamated KCCL was in existence, while KML,KRL and KCL was dissolved without the process of winding up. The assets and liabilities were taken over by KCCL as a result of this amalgamation.The amalgamated Keltron Component Complex Ltd is a major indigenous manufacturer of Aluminium Electrolytic Capacitors, MPP capacitors carbon & Metal Film Resistors and Piezoelectric Quartz crystals. KCCL markets its products under the brand name "KELTRON" of its parent company. It has the state of the art manufacturing facility with sophisticated automatic machines from Japan and Europe. The company's quality system has been conferred with the ISO 9001 accreditation by KPMG.

Chapter 3

ORGANISATIONAL HISTORY

Today we live in a world where speed, flexibility, intellectual capital development and networks have become the basis for value creation. In this technology driven environment Keltron finds the assimilation adoption and integration of technology rather than investing it. Keltron has become the catalyst in marketing electronics in almost every aspect of our daily life. Since 1973 Keltron's strength lies in the stable foundation and experience built over the years its strong human capital, this nationwide network and its ability to adapt itself to change with over 30 year long track record as a manufacture or sophisticated electronics devices and system.

A strong infrastructure and manufacturing experience since its inception in 1973 Keltron forte has always been high quality manufacturing. During the past 30 years Keltron has churned out a whole range of electronic in products electro-mechanical and high precision modules and sub assemblies of different industry segment.Keltron entered the electronic components industry by setting the electronic components industry by setting up India's largest Aluminum Electrolyte Capacitor plant in technical collaboration with Sprague Electromagnet Belgium in 1976 at Kannur in Kerala.

Mission

The mission of Keltron is to transform itself to one of the Navaratna Corporations of the country. To achieve this mission the organization has set a clearly defined strategy in motion encompassing its core strengths experienced human resources robust infrastructure for high quality manufacture, committed to quality and continuous research and development.

Vision

- To emerge as a strong and self- reliant business enterprise with customer focus, profit orientation and professional outlook.
- To fit the company as Rs. 5 billion company with a net profit of 10% in sales.
- To build up Keltron as a model in the sunrise technology sector of electronics and IT.
- To function as a backbone of electronic industry in the state.
- To continue to play the role of a model agency of the Government for accelerating the growth of development of this core industry in this State.

PERSONNEL DEPARTMENT

Men, Materials and Machines are regarded as the three important factors of production. Among these factors human resource or men is important because, without human beings the other factors cannot perform well. Therefore, human beings constitute the Organization at all levels, and are regarded as the chief dynamic factor of production.
The management makes an effort to co-ordinate human and material resources in such a manner that organizational objectives are achieved. It is not very difficult to handle material resources, but without the efficient use of Human Resource Management, it can never accomplish the objectives of the business.

The Personnel Management can be defined as the Planning, Organizing, Directing and Controlling of the Procurement, Development, Compensation, integration and maintenance and separation of Human Resources to the end that individual, Organization and social objectives are accomplished.
The Personnel Department aims at ensuring a steady source of Human Resource who can contribute to the successful enterprise. The department deals with the management of human resource. The very existence of an undertaking depends upon the competent, co-operative and dedicated performance of the personnel.

Personnel functions of the company consist of several Managerial and Operative Functions. The Managerial Functions are Planning, Organizing, Directing and Controlling of Human Beings. The Operative functions relate to ensuring right people for the right jobs at the right time. These functions include Procurement, Development, Compensation and Maintenance of employees.

Manpower Planning

For meeting the requirements of employees, management must decide beforehand as to what type of men is to be recruited and in what number they are required. The first problem is solved by Job Analysis and the second problem is tackled through Man Power Planning. Manpower Planning is the systematic and continuing process of analyzing organizations. Workforce requirements under changing conditions and developing personnel policies appropriate to the long term effectiveness of the organization. Therefore, a proper and systematic manpower program requires proper forecasting and planning for future. It should consider developing manpower requirements for the whole organization, to create and evaluate the manpower inventory and to develop required talents among the employees selected for promotions.

Recruitments And Placements

Recruitment is the process of searching for prospective employees andstimulating them to apply for jobs in the organization. Placement is the process of assigning the selected candidate with the most suitable jobs in terms of job requirements.As KCCL is a Government Company, recruitment of candidates is done through employment exchange. For executive posts the company approaches professional and employment exchange, Trivandrum and local employment exchanges.As and when a vacancy arises, Personnel and Administration Department notifies it to employment exchanges.

For executive posts the company approaches professional employment exchanges, Trivandrum local employment exchange. Then the personnel department publishes vacancies in leading newspapers. After receiving the applications from the candidates, the department goes for scrutinizing them. The company calls the selected candidates for interview. For this the company has a Selection Board, represented by concerned departmental head, a nominee of the Government of Kerala and the Personnel Manager. This board conducts interviews and selects suitable candidates. Then the company gives appointment order to the selected candidate along with terms and conditions for appointment. If the person is willing to abide by the terms and conditions he is directed to sign and return one of the copies of the order.

Training

Training is the act of increasing the knowledge and skill of an employee for doing a particular job. The purpose of training is to bring about improvement in the performance of work. It includes the learning of such techniques as are required for the better performance of work.

It includes the learning of such techniques as are required for the better performance of definite task.In KCCL, internal as well as external training is given to employees. Fresh hands will be selected as trainees for a period of one year. For existing employees, it is conducting refresher training by way of lectures, work educational classes, external training etc.

Chapter 4

INDUCTION OR ORIENTATION TRAINING

There are two phases of Induction training program. The first phase is generally conducted by the Personnel Department. It is concerned with giving the new employees friendly welcome, explaining the matters concerned with the Company's background, products, health and welfare plans etc. The Head of the Department under whom he has to work conducts the second phase of induction program. The employees are given information regarding production, work rules, working conditions.On first appointment, employees are initially given on- the-job training. Due to technological developments and improved techniques of management and production the training initially given will become out of date and arises the need to give new training. For this regional Worker's Training Education Center Officers come to KCCL. All the details regarding the training given to employees are recorded in KCCL for future reference. Details such as name of employees, date of birth, qualification, type of training, department in which he is working, joining date, training period etc. are recorded.

Performance Appraisal

Performance appraisal is the systematic evaluation of an individual's performance in the job and his potential for development. Appraisal is the evaluation of work quality. It is the systematic and objective way of judging the relative work or ability of an employee in performing his job. Ordinarily the evaluation is done by immediate supervisors. So it is a technique used to know the work of an employee qualitatively and quantitatively on- the-job in comparison with other employees. It is one of the oldest and usual practices of management.

In KCCL at the end of training period the trainees are observed according to his performance during the training period. The Personnel Department provides performances forms for self appraisal, executive appraisal and annual performance appraisal. Self-appraisal form is for self-assessment of the employees. The other two are filled by the concerned department supervisors. Depending upon the performance of the trainee the personnel department decides whether the probation period is to be extended or not. On the basis of his performance during the probation period, the department then decides about the regular placements of the employee.

TIME KEEPING

Every employee is given a separate card with specific number having four digits. The workers, employees, supervisors or executive have different serial number. A master role is kept by the organization. Electronic punching system in KCCL is used to record the time of entry and exist of each employee. Maximum half an hour late is permitted to every employee. In the record half late coming is not allowed

Chapter 5

IMPLANT TRAINING

5.1 CAPACITORS

PRODUCTION OF ALUMINUM ELECTROLYTIC CAPACITORS

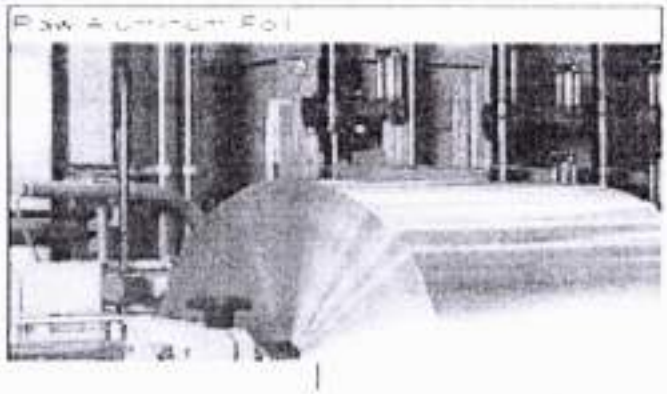

Fig 1: Raw material

(1) Etching

To obtain higher capacitance, surface area of aluminum foil for electrolytic capacitor increases through etching process. In etching process, aluminum foil is applied with DC or AC current in a chloride solution to preferentially dissolve the surface. Surface area is increased by 60-150 times for low voltage foils and 10-30 times for high voltage foils.

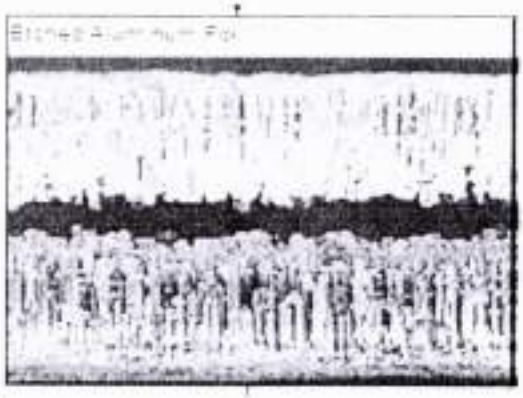

Fig 2: Etched al foil

(2) Anodization(Formation of Dielectric Layer)

Aluminum foil for electrolytic capacitor is further formed with anodic oxide film (Al2O3) on the surface as dielectric layer. Etched aluminum foil is immersed into a solution including ammonium salt of boric acid or phosphoric acid and applied with DC voltage so that the foil becomes positive and the solution becomes negative.Then aluminum oxide film is formed on the surface in proportion to the applied voltage. The anodic oxide film, having the thickness of 13-15 angstrom/V(1.3-1.5 nm/V), is extremely thin, compact and highly insulating.

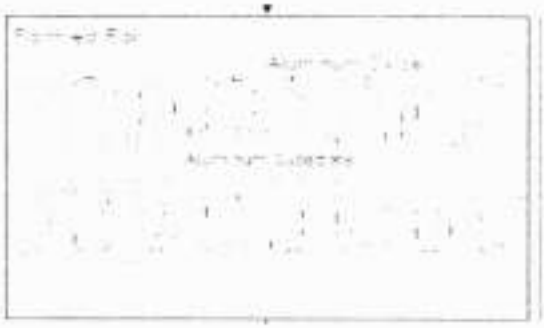

Fig 3: Anodization

(3) Slitting Process

Etching and Forming are processed with wide roll of master foil. Then the master roll is slitted into individual rolls with specified width as per thespecification

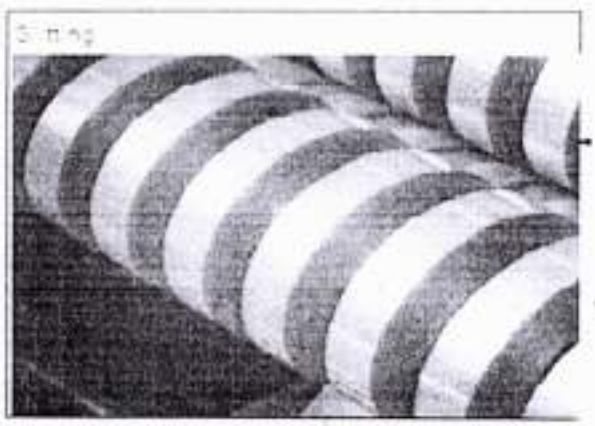

Fig 4: Slitting

(4) Stitching and Winding

Slit anode and cathode foils after slitting process are stitched with lead tabs and wound into cylindrical element together with spacer paper. Spacer paper is to contain liquid electrolyte that works as real cathode and restores damaged dielectric film, as well as maintaining the distance between anode and cathode foils constant to prevent short circuit.

Fig 5: Stitching and winding

(5) Impregnation

Wound element is immersed into electrolyte bath under either low air pressure condition or normal pressure to impregnate.Electrolyte contains one or more polyhydric alcohols such as ethylene glycol as the major solvents and oneor more ammonium salts as solutes to restore the damaged oxide film (dielectric) and significantly improve the performance and life of the capacitor.

Fig 6: Impregnation

(6) Assembling

Rubber seal, rubber-lined terminal plate or molded terminal plate is attached to impregnated element.

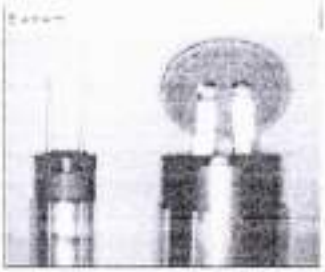

Fig 7: Assembling

(7) Encapsulation

Capacitor element is put into aluminum case and sealed together with rubber seal or terminal plate. Materials to seal up capacitor are EPT or IIR, which is selected depending on the capacitor series.

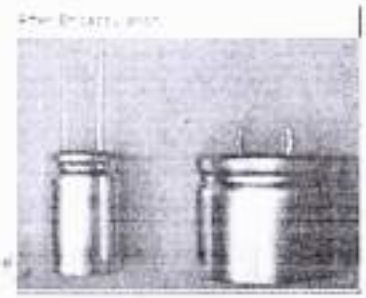

Fig 8: Encapsulation

(8) Sleeve

Sealed capacitor is covered with sleeve made of heat shrinkable PVC or PET. The purpose of sleeve is to indicate information of the capacitor. When electric insulation of inner element or aluminum case is required, proper materials shall be selected

(9) Aging (Reforming)

As described above, the oxide film as the dielectric is formed in Anodization (Forming) Process, but aluminum substrate is exposed during slitting process and stitching process. Oxide film layer is possibly damaged or cracked during winding. Restoringoxide film is necessary for capacitor to fully function.In this process, capacitors are applied with DC voltage in high temperature atmosphere to repair damagedoxide film. Aging makes leakage current of capacitor stable andalso debugs initial failure.

(10) Process Inspection & Packaging

Capacitors finished with aging are packaged throughelectrical screening and appearance inspection.

(11) Outgoing Inspection

Outgoing inspection is conducted based on our ownsampling plan and criteria.

Fig 9: Capacitor complete product

5.2 RESISTORS

Fig 10: Resisters

The tape is removed during assembly before the leads are formed and the part is inserted into the board. In automated assembly the leads are cut and formed.A resistor is a passive two-terminal electrical component thatimplementselectrical resistance as a circuit element. Resistors act to reduce current flow, and, at the same time, act to lower voltage levels within circuits. In electronic circuits resistors are used to limit current flow, to adjust signal levels, biasactive elements, terminate transmission lines among other uses. High-power resistors that can dissipate many watts of electrical power as heat may be used as part of motor controls, in power distribution systems, or as test loads forgenerators. Resistors can have fixed resistances that only change slightly with temperature, time or operating voltage. Variable resistors can be used to adjust circuit elements (such as a volume control or a lamp dimmer), or as sensing devices for heat, light, humidity, force, or chemical activity.

Resistors are common elements of electrical networks and electronic circuitsand are ubiquitous in electronic equipment. Practical resistors as discrete components can be composed of various compounds and forms. Resistors are also implemented within integrated circuits.The electrical function of a resistor is specified by its resistance: common commercial resistors are manufactured over a range of more than nine orders of magnitude. The nominal value of the resistance will fall within a manufacturing tolerance.

OPERATION

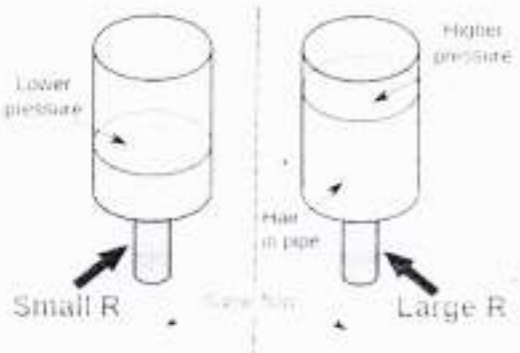

Fig 11: Resister operation

The hydraulic analogy compares electric current flowing through circuits to water flowing through pipes. When a pipe (left) is filled with hair (right), it takes a larger pressure to achieve the same flow of water. Pushing electric current through a large resistance is like pushing water through a pipe clogged with hair. It requires a larger push (voltage drop) to drive the same flow (electric current).

FIXED RESISTORS

A single in line (SIL) resistor package with 8 individual, 47 ohm resistors. One end of each resistor is connected to a separate pin and the other ends are all connected together to the remaining (common) pin – pin 1, at the end identified by the white dot.

Lead arrangements

Resistors with wire leads for through-hole mountingThrough-hole components typically have leads leaving the body axially. Others have leads coming off their body radially instead of parallel to the resistor axis. Other components may be SMT (surface mount technology) while high power resistors may have one of their leads designed into the heat sink.

Carbon composition

Fig 12: Carbon composition Resisters

Three carbon composition resistors in a 1960s valve (vacuum tube) radioCarbon composition resistors consist of a solid cylindrical resistive element with embedded wire leads or metal end caps to which the lead wires are attached. The body of the resistor is protected with paint or plastic.

Early 20th-century carbon composition resistors had uninsulated bodies; the lead wires were wrapped around the ends of the resistance element rod and soldered. The completed resistor was painted for color-coding of its value.The resistive element is made from a mixture of finely ground (powdered) carbon and an insulating material (usually ceramic). A resin holds the mixture together. The resistance is determined by the ratio of the fill material (the powdered ceramic) to the carbon. Higher concentrations of carbon— a good conductor— result in lower resistance. Carbon composition resistors were commonly used in the 1960s and earlier, but are not so popular for general use now as other types have better specifications, such as tolerance, voltage dependence, and stress (carbon composition resistors will change value when stressed with over-voltages). Moreover, if internal moisture content (from exposure for some length of time to a humid environment) is significant, soldering heat will create a non-reversible change in resistance value. Carbon composition resistors have poor stability with time and were consequently factory sorted to, at best, only 5% tolerance. These resistors, however, if never subjected to overvoltage nor overheating were remarkably reliable considering the component's size.

Carbon composition resistors are still available, but comparatively quite costly. Values ranged from fractions of an ohm to 22 mega ohms. Due to their high price, these resistors are no longer used in most applications. However, they are used in power supplies and welding controls.

Carbon pile

A carbon pile resistor is made of a stack of carbon disks compressed between two metal contact plates. Adjusting the clamping pressure changes the resistance between the plates. These resistors are used when an adjustable load is required, for example in testing automotive batteries or radio transmitters. A carbon pile resistor can also be used as a speed control for small motors in household appliances (sewing machines, hand-held mixers) with ratings up to a few hundred watts.

Carbon film

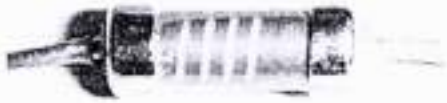

Fig 13: Carbon film resisters

Carbon film resistor with exposed carbon spiral (Tesla TR-212 1 kΩ)A carbon film is deposited on an insulating substrate, and a helix is cut in it to create a long, narrow resistive path. Varying shapes, coupled with the resistivity ofamorphous carbon (ranging from 500 to 800 μΩ m), can provide a wide range of resistance values. Compared to carbon composition they feature low noise, because of the precise distribution of the pure graphite without binding. Carbon film resistors feature a power rating range of 0.125 W to 5 W at 70 °C. Resistances available range from 1 ohm to 10 méga ohm. The carbon film resistor has anoperating temperature range of −55 °C to 155 °C. It has 200 to 600 volts maximum working voltage range. Special carbon film resistors are used in applications requiring high pulse stability.

PRODUCTION OF RESISTORS

RESISTANCE STANDARDS

The primary standard for resistance, the "mercury ohm" was initially defined in 1884 in as a column of mercury 106.3 cm long and 1 square millimeter in cross-section, at 0 degrees Celsius. Difficulties in precisely measuring the physical constants to replicate this standard result in variations of as much as 30 ppm. From 1900 the mercury ohm was replaced with a precision machined plate of manganin.Since 1990 the international resistance standard has been based on thequantized Hall effect discovered by Klaus von Klitzing, for which he won the Nobel Prize in Physics in 1985.Resistors of extremely high precision are manufactured for calibration and laboratory use. They may have four terminals, using one pair to carry an operating current and the other pair to measure the voltage drop.

It is important in small value resistors (100–0.0001 ohm) where lead resistance is significant or even comparable with respect to resistance standard value.

RESISTOR MARKING

Most axial resistors use a pattern of colored stripes to indicate resistance, which also indicate tolerance, and may also be extended to show temperature coefficient and reliability class. Cases are usually tan, brown, blue, or green, though other colors are occasionally found such as dark red or dark gray. The power rating is not usually marked and is deduced from the size.The color bands of the carbon resistors can be four, five or, six bands. The first two bands represent first two digits to measure their value in ohms. The third band of a four-banded resistor represents multiplier and the fourth band as tolerance. For five and six color-banded resistors, the third band is a third digit, fourth band multiplier and fifth is tolerance. The sixth band represents temperature co-efficient in a six-banded resistor.Surface-mount resistors are marked numerically, if they are big enough to permit marking; more-recent small sizes are impractical to mark.. A second color of paint was applied to one end of the element, and a color dot (or band) in the middle provided the third digit. The rule was "body, tip, dot", providing two significant digits for value and the decimal multiplier, in that sequence. Default tolerance was ±20%. Closer-tolerance resistors had silver (±10%) or gold-colored (±5%) paint on the other end.

Preferred values

A series might have 100, 125, 150, 200, 300, etc. Resistors as manufactured are subject to a certain percentage tolerance, and it makes sense to manufacture values that correlate with the tolerance, so that the actual value of a resistor overlaps slightly with its neighbors. Wider spacing leaves gaps; narrower spacing increases manufacturing and inventory costs to provide resistors that are more or less interchangeable.Resistors are manufactured in values from a few milliohms to about a gigaohm in IEC60063 ranges appropriate for their tolerance.

Manufacturers may sort resistors into tolerance-classes based on measurement. Accordingly a selection of 100 ohms resistors with a tolerance ±10% might not lie just around 100 ohm (but no more than 10% off) as one would expect (a bell-curve). But rather be in two groups – either between 5 to 10% too high or 5 to 10% too low (but not closer to 100 ohm than that) because any resistors the factory had measured as being less than 5% off would have been marked and sold as resistors with only ±5% tolerance or better. When designing a circuit, this may become a consideration.

FAILURE MODES

The failure rate of resistors in a properly designed circuit is low compared to other electronic components such as semiconductors and electrolytic capacitors. Damage to resistors most often occurs due to overheating when the average power delivered to it (as computed above) greatly exceeds its ability to dissipate heat (specified by the resistor's *power rating*). This may be due to a fault external to the circuit, but is frequently caused by the failure of another component (such as a transistor that shorts out) in the circuit connected to the resistor. Operating a resistor too close to its power rating can limit the resistor's lifespan or cause a change in its resistance over time which may or may not be noticeable. A safe design generally uses overrated resistors in power applications to avoid this danger. Low-power thin-film resistors can be damaged by long-term high-voltage stress, even below maximum specified voltage and below maximum power rating. This is often the case for the startup resistors feeding the SMPS integrated circuit.When overheated, carbon-film resistors may decrease or increase in resistance.Carbon film and composition resistors can fail (open circuit) if running close to their maximum dissipation. This is also possible but less likely with metal film and wirewound resistors. An alternative failure mode can be encountered where large value resistors are used (100's of kilohms and higher). Resistors are not only specified with a maximum power dissipation, but also for a maximum voltage drop. Exceeding this voltage will cause the resistor to degrade slowly reducing in resistance. The voltage dropped across large value resistors can be exceeded before the power dissipation reaches its limiting value.

Chapter 6

CONCLUSION

With the knowledge ofnew techniques in 'Electronics' we are able to make our life more comfortable. One such is "**IN PLANT TRANINING**" at **KELTRON COMPONENT COMPLEX LTD, KANNUR**.. It is a great thing that the company is trying to reach its break-even during this year. By real effort they reduced its current year loss.

Dr. LEENA A V
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PAYYANUR, KANNUR

Est. 2003

Sree Narayana Guru College of Engineering & Technology

CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307

DEPARTMENT OF MECHANICAL ENGINEERING

INTERNSHIP DETAILS

ACADEMIC YEAR : 2020-2021

Sl.No	Name	Industry	Year	Duration
1	Adarsh PK	Robotics , Verzen	2020-2021	2 months
2	Arsh Ibrahim	Robotics, Zindot Technologies	2020-2021	10 days
3	Farhan C	Robotics, Zindot Technologies	2020-2021	10 days
4	Jasin P	Robotics , Verzen	2020-2021	2 months
5	Muhammed Aaafil Ismail	Robotics and embedded Systems I band Technologies	2021-2022	10 days
6	Muhammed Ramadan Anwar	Robotics, Zindot Technologies	2020-2021	10 days
7	Mridul C	Robotics, Zindot Technologies	2020-2021	10 days
8	Safwan IM	Robotics, Zindot Technologies	2020-2021	10 days
9	Sreehari S Nambiar	Robotics , Verzen	2020-2021	2 months
10	Vidyasagar P	Robotics, Zindot Technologies	2020-2021	10 days

Dr. LEENA A V
PRINCIPAL
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FACULTY ADVISOR PRINCIPAL HOD ME

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INTERNSHIP CERTIFICATION

This is to certify that

ADARSH PK

Dr. LEENA A. V.
PRINCIPAL

has successfully completed an Internship Program Robotics

from 01-09-2020 to 01-11-2020.

During the Internship, the student was found to be

dedicated, hardworking, and diligent.

09-01-2021

DATE

VICE PRESIDENT - HR

IID : 16013529020

CERTIFICATE

POWERED BY verzeo

Sreehari S Nambiar

has successfully completed Robotics

from 01-09-2020 to 01-11-2020

During this course, we found the student to be a keen and enthusiastic candidate.

Certificate No: 3802305026

17/11/2020

Date

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Dr. LEKHA A.V.
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JASIN P

has successfully completed an Internship Program Robotics

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During the Internship, the student was found to be

dedicated, hardworking, and diligent.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, KANNUR

09-01-2021

DATE

VICE PRESIDENT - HR

UID : 1621252020

ZINDOT TECHNOLOGIES

zindot.in

CERTIFICATE

This is to certify that

FARHAN C

student of

SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY

has completed 10 days internship training in **ROBOTICS** from 24th November 2021 at ZINDOT TECHNOLOGIES, Kochi. During this intern period, we found him/her a sincere, honest, hardworking, dedicated student with a professional attitude and very good professional knowledge.
We wish you every success in all future endeavours.

Date : 06 DECEMBER 2021

Director
ZINDOT TECHNOLOGIES

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student of

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This is to certify that

VIDYASAGAR P

student of

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has completed 10 days internship training in **ROBOTICS** from 24th November 2021 at ZINDOT TECHNOLOGIES, Kochi. During this intern period, we found him/her a sincere, honest, hardworking, dedicated student with a professional attitude and very good professional knowledge.
We wish you every success in all future endeavours.

Date : 06 DECEMBER 2021

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ZINDOT TECHNOLOGIES

ZINDOT TECHNOLOGIES
KOCHI-682 034

iBAND Technologies

14/01/2022

CERTIFICATE

This is to certify that Mohammed Aafil Ismayil M K, having the university register number : SNC19ME011 , B.Tech Mechanical Engineering student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed internship training program in ' Robotics & Embedded Systems' at IBAND Technologies, Kochi from 29/12/2021 to 14/01/2022.

For IBAND Technologies

HR Manager

IBAND TECHNOLOGIES KOCHI

Dr. LEENA A. V.
PRINCIPAL
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During this course, we found the student to be a keen and enthusiastic candidate.

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INTERNSHALA TRAININGS

Certificate of Training

Athul B

has successfully completed a six weeks online training on **AutoCAD** from 1st July, 2020 to 12th August, 2020. The training consisted of Interface, Drawing Aids & Basic Objects, Complex Objects & Object editing, Blocks & Annotations and Plotting & Introduction to 3D modules. In the final assessment, Athul scored 70% marks. We wish Athul all the best for the future.

Sarvesh Agrawal
Founder & CEO, Internshala

Dr. LEENA. A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

Date of certification: 2020-07-31 Certificate no.: 7862B613-C315-0E7E-9906-01D07E40B0C0

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SREE NARAYANA GURU COLLEGE OF ENGINEERING

& TECHNOLOGY

(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

Internship on

ROBOTICS

at

VERSEN

Submitted by

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JASIN P

SREEHARI S NAMBIAR

DEPARTMENT OF MECHANICAL ENGINEERING

2021

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SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

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DEPARTMENT OF MECHANICAL ENGINEERING

BONAFIDE CERTIFICATE

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Department of ME

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CERTIFICATION

This is to certify that

JASIN P


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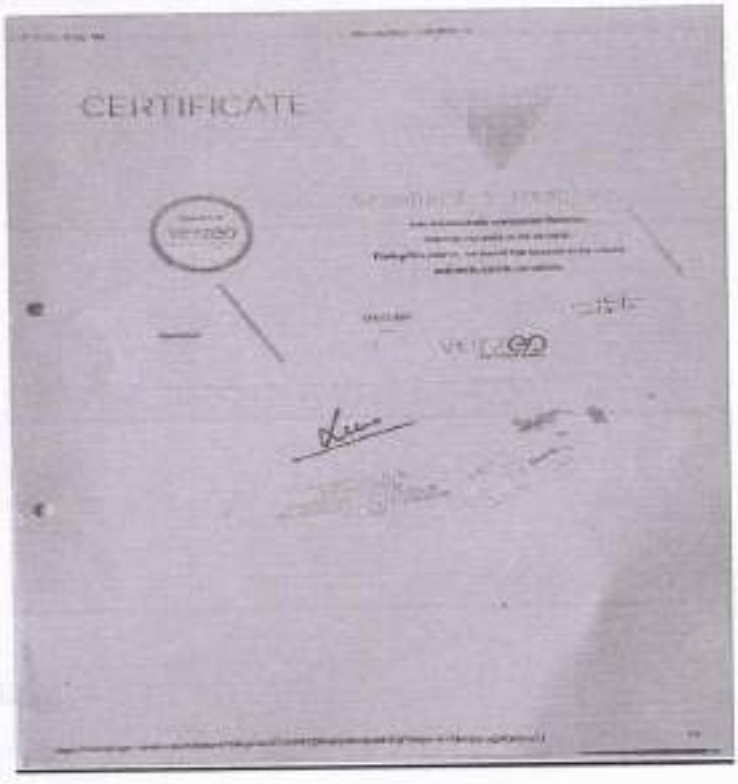
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INTRODUCTION

Company Overview

Versen is a leading innovator in the robotics sector, providing cutting-edge solutions to optimize industrial processes. The company's core competencies lie in designing and implementing robotic systems tailored to specific industry needs. Versen's solutions span a wide range of sectors, including manufacturing, logistics, healthcare, and agriculture.

Versen's core competencies revolve around robotics and automation, with key strengths in the following areas:

Robotics Solutions: Versen designs and deploys robotic systems tailored to specific industry needs, including manufacturing, logistics, healthcare, and agriculture. These solutions encompass robotic arms, autonomous vehicles, and integrated automation platforms.

Automation Technologies: The company leverages automation technologies such as machine learning, computer vision, and artificial intelligence to optimize processes and decision-making within industrial environments.

System Integration: Versen excels in integrating robotics and automation systems seamlessly into existing infrastructure, ensuring compatibility, scalability, and performance.

Innovation and Research: Versen prioritizes innovation through ongoing research and development initiatives. The company explores emerging trends in robotics, including collaborative robotics (cobots), IoT integration, and predictive maintenance.

OVERVIEW OF THE INTERNSHIP PROGRAM

Objective

The internship program at Versen aims to provide students and recent graduates with practical exposure to the field of robotics and automation. The program is designed to complement academic learning with hands-on experience, fostering professional growth and skill development in a dynamic industrial environment.

Duration

The duration of the internship program at Versen typically ranges from a few months to a year, depending on the specific arrangement and the intern's academic schedule. Longer durations may allow for deeper engagement with projects and more comprehensive learning opportunities. Here the duration of the program was 2 months.

Key Components

1. Hands-on Experience: Interns at Versen are immersed in real-world projects under the guidance of experienced professionals. This includes participating in design, development, testing, and deployment activities related to robotics and automation solutions.
2. Learning and Development: The internship program emphasizes continuous learning and skill development. Interns have access to training sessions, workshops, and mentorship programs to enhance their technical and professional competencies.
3. Project Assignments: Interns are assigned specific projects or tasks aligned with their areas of interest and academic background. These assignments provide practical application of theoretical knowledge and contribute to ongoing initiatives at Versen.
4. Collaboration: Interns have the opportunity to collaborate with multidisciplinary teams, including engineers, researchers, and project managers. This collaborative environment encourages knowledge-sharing and networking.
5. Exposure to Industry Practices: Interns gain insights into industry best practices, technological trends, and regulatory considerations relevant to robotics and automation. They also learn about the challenges and opportunities inherent in deploying advanced technologies in industrial settings.

PROJECT OVERVIEW

Project Objectives:

Enhance the efficiency and throughput of an existing material handling system within the client's manufacturing facility. Implement robotic solutions to automate repetitive tasks and reduce manual intervention. Improve overall operational productivity while maintaining safety standards.

Scope of Work:

1. **System Analysis and Design:**

Conducted a thorough analysis of the client's material handling process, including inventory management and parts assembly.

Designed a comprehensive plan to integrate robotic technologies for optimized material flow and task automation.

2. **Robotics Integration:**

Selected appropriate robotic arms and end-effectors based on payload requirements and task complexity.

Developed motion plans and programming logic to enable seamless interaction between robots and existing conveyor systems.

3. **Software Development:**

Implemented control algorithms and interface software using ROS (Robot Operating System) for coordinated robot operations.

Integrated sensors and vision systems for real-time feedback and quality assurance.

4. **Testing and Validation:**

Conducted rigorous testing phases to validate system performance, including cycle time analysis and error handling.

Collaborated with client stakeholders to ensure alignment with operational requirements and safety standards.

5. **Deployment and Training:**

Assisted in the onsite deployment of robotic systems, including installation, commissioning, and calibration.

Provided training sessions for client operators and maintenance staff on system operation and troubleshooting.

PRODUCT OVERVIEW

VersPack Pro is an advanced robotic packaging system designed to automate and optimize the packaging process in manufacturing and logistics facilities. This innovative solution combines state-of-the-art robotics technology with intelligent software to enhance efficiency, accuracy, and throughput in packaging operations.

Key Features:

1. Versatile Robotic Arms:

The system features versatile robotic arms capable of handling various packaging tasks, including picking, placing, and sealing.

Robotic arms can adapt to different packaging formats, sizes, and weights, offering flexibility in production environments.

2. Intuitive Control Interface:

VersPack Pro is equipped with an intuitive control interface that allows operators to easily configure packaging parameters and monitor system performance.

The user-friendly interface facilitates quick setup and integration into existing production lines.

3. Vision System Integration:

Integrated vision systems enable precise product recognition and orientation, ensuring accurate packaging and reducing errors.

Computer vision algorithms optimize picking and placement tasks, enhancing overall efficiency and quality.

4. Automated Packaging Sequences:

VersPack Pro automates packaging sequences, streamlining the entire process from product feeding to final packaging.

The system can handle complex packaging requirements efficiently, improving overall productivity and reducing labor costs.

5. Scalability and Customization:

Versen offers scalable configurations of the VersPack Pro to accommodate different production volumes and requirements.

Customizable features allow for tailored solutions based on specific industry needs and packaging applications.

Benefits:

- Increased Efficiency: Automating packaging tasks with VersPack Pro reduces cycle times and improves overall production efficiency.
- Enhanced Accuracy: Advanced vision systems and robotic precision ensure consistent and error-free packaging results.
- Cost Savings: Reduced labor costs and minimized packaging waste contribute to cost savings for manufacturing operations.

- Flexibility: VersPack Pro adapts to changing production demands and accommodates a wide range of packaging requirements.
- Quality Assurance: The system enhances product quality by minimizing handling errors and ensuring secure packaging.

Applications:

VersPack Pro is suitable for various industries and applications, including:

- Food and beverage packaging
- Pharmaceutical packaging
- Consumer goods packaging
- E-commerce fulfillment centers

CONCLUSION

The internship program at Versen offers a structured and immersive learning experience for individuals aspiring to build a career in robotics and automation. By combining theoretical knowledge with practical application, interns develop the skills and confidence needed to excel in this dynamic and evolving industry.

SREE NARAYANA GURU COLLEGE OF ENGINEERING

& TECHNOLOGY

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Internship on

ROBOTICS

at

IBAND TECHNOLOGIES

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DEPARTMENT OF MECHANICAL ENGINEERING

2021

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iBAND Technologies

14/01/2022

CERTIFICATE

This is to certify that Mohammed Aafil Ismayil M K, having the university register number : SNC19ME011 , B.Tech Mechanical Engineering student of Sree Narayana Guru College of Engineering and Technology, Payyanur has successfully completed internship training program in " Robotics & Embedded Systems" at IBAND Technologies, Kochi from 29/12/2021 to 14/01/2022.

For IBAND Technologies

HR Manager

IBAND TECHNOLOGIES KOCHI

Dr. LEENA A. V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY PAYYANUR, KANNUR

1st Floor, Geo Infopark, Kakkanad, Kochi, Kerala-682042
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FACULTY ADVISOR

HOD ME

Dr. LEENA A V
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PAYYANUR, KANNUR

INTRODUCTION

Company Overview

IBAND Technologies is a leading provider of advanced robotics and automation solutions, leveraging cutting-edge technologies such as artificial intelligence, machine learning, and computer vision. The company is dedicated to developing intelligent systems that enhance productivity, efficiency, and safety across diverse sectors. IBAND Technologies' portfolio includes robotic arms, autonomous vehicles, automated inspection systems, and custom robotic solutions tailored to specific industry needs.

Objectives of the Internship

The primary objectives of my internship at IBAND Technologies were as follows:

- Gain hands-on experience in robotics software development, system integration, and testing.
- Deepen my understanding of robotics algorithms, sensor technologies, and control systems.
- Contribute to ongoing robotics projects by collaborating with multidisciplinary teams.
- Learn about industry standards, safety protocols, and best practices in robotics engineering.

OVERVIEW OF THE INTERNSHIP PROGRAM

Zindot Technologies offers a dynamic and enriching internship program designed to provide students and recent graduates with practical experience and exposure to the innovative world of robotics, automation, and artificial intelligence. The internship program at Zindot Technologies is structured to offer valuable learning opportunities, hands-on projects, and mentorship from industry professionals.

Program Objectives

The internship program at IBAND Technologies is structured with the following objectives:

1. Skill Development: Provide interns with practical skills and knowledge in robotics software development, system integration, and hardware design.

2. Project Experience: Involve interns in real-world projects to apply theoretical knowledge and gain practical experience in robotics and automation technologies.
3. Mentorship and Guidance: Pair each intern with a mentor who provides support, feedback, and mentorship throughout the internship period.
4. Industry Exposure: Expose interns to industry standards, best practices, and emerging trends in robotics and automation.
5. Professional Development: Foster personal and professional growth through teamwork, collaboration, and problem-solving within a professional work environment.

PROJECT OVERVIEW

The internship program at IBAND Technologies offers interns the opportunity to work on exciting and impactful projects within the realm of robotics and automation. This project overview outlines the scope, objectives, and key components of the internship program, highlighting the hands-on experiences and learning opportunities provided to participants.

Program Objectives

The primary objectives of the internship program at IBAND Technologies are as follows:

1. Hands-on Learning: Provide interns with practical, hands-on experience in robotics software development, hardware design, and system integration.
2. Project-based Experience: Involve interns in real-world projects to apply theoretical knowledge and contribute to innovative solutions.
3. Skill Development: Enhance interns' technical skills, problem-solving abilities, and collaboration through project assignments and mentorship.
4. Industry Exposure: Expose interns to industry standards, best practices, and emerging technologies in robotics and automation.
5. Professional Growth: Foster personal and professional development through mentorship, training, and networking opportunities.

PRODUCT OVERVIEW

1. **Robotics Systems:**

Interns may work on projects involving robotic systems, including robotic arms, mobile robots, or specialized robotic platforms for specific applications. Focus areas could include robotic motion planning, control algorithms, sensor integration, and human-robot interaction.

2. **Automation Software:**

Interns might contribute to the development of automation software, such as control systems, simulation environments, or software frameworks like ROS (Robot Operating System). They could gain experience in programming languages like Python, C++, and tools for simulation and visualization.

3. **Computer Vision and Perception:**

Projects may involve computer vision techniques for object detection, localization, and recognition. Interns could work on algorithms for visual perception, depth sensing, and image processing applied to robotics applications.

4. **Sensor Integration:**

Interns may learn about different sensors used in robotics, such as LiDAR, cameras, inertial measurement units (IMUs), and proximity sensors. They could participate in sensor selection, calibration, and integration into robotic systems.

5. **Artificial Intelligence (AI) and Machine Learning:**

Projects might leverage AI and machine learning for tasks like path planning, decision-making, and predictive analytics in robotic systems. Interns could explore reinforcement learning, neural networks, and other AI techniques applicable to robotics.

6. **Industrial Applications:**

Interns may gain exposure to robotics applications in industrial settings, such as manufacturing automation, logistics, warehouse management, or quality control. They could work on projects optimizing production processes, increasing efficiency, and ensuring safety using robotic technologies.

CONCLUSION

The internship program at IBAND Technologies has provided a transformative and enriching experience for participants, offering valuable opportunities to delve into the dynamic field of robotics and automation. Throughout the program, interns have gained practical skills, industry exposure, and professional development that prepare them for successful careers in technology. This conclusion highlights the key aspects and benefits of the internship program at IBAND Technologies.

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PAYYANUR, KANNUR

SREE NARAYANA GURU COLLEGE OF ENGINEERING

& TECHNOLOGY

(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

Internship on

ROBOTICS

at

ZINDOT TECHNOLOGIES

Submitted by

ARSH IBRAHIM

FARHAN C

MUHAMMED RAMADAN ANWAR

MRIDUL C

SAFWAN I M

VIDYASAGAR P

DEPARTMENT OF MECHANICAL ENGINEERING

2021

Dr. LEENA A V
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PAYYANUR, KANNUR

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

DEPARTMENT OF MECHANICAL ENGINEERING

BONAFIDE CERTIFICATE

*This is to certify that Industrial Training at "***ZINDOT TECHNOLOGIES"** *is a bonafide record of the work done by* **ARSH IBRAHIM, FARHAN C, MUHAMMED RAMADAN ANWAR, MRIDUL C, SAFWAN I M, VIDYASAGAR P** *of fifth semester* ***DEPARTMENT OF MECHANICAL ENGINEERING*** *towards the partial fulfillment for the award of the degree of* **Bachelor of Technology** *by* APJ Abdul Kalam Technological University.

Faculty Advisor
Department of ME

Head of the Department
Department of ME

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ZINDOT TECHNOLOGIES

zindot.in

CERTIFICATE

This is to certify that

VIDYASAGAR P

student of

SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY

has completed 10 days internship training in **ROBOTICS** from 24th November 2021 at ZINDOT TECHNOLOGIES, Kochi. During this intern period, we found him/her a sincere, honest, hardworking, dedicated student with a professional attitude and very good professional knowledge.
We wish you every success in all future endeavours.

ZINDOT TECHNOLOGIES

Date : 06 DECEMBER 2021

Director
ZINDOT TECHNOLOGIES

ZINDOT TECHNOLOGIES KOCHI-682 024

zindottechnologies@gmail.com

Dr. LEENA A V
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This is to certify that

SAFVAN I M

student of

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has completed 10 days internship training in **ROBOTICS** from 24th November 2021 at ZINDOT TECHNOLOGIES, Kochi. During this intern period, we found him/her a sincere, honest, hardworking, dedicated student with a professional attitude and very good professional knowledge.
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MRIDUL C

student of

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has completed 10 days internship training in **ROBOTICS** from 24th November 2021 at ZINDOT TECHNOLOGIES, Kochi. During this intern period, we found him/her a sincere, honest, hardworking, dedicated student with a professional attitude and very good professional knowledge.
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Date : 06 DECEMBER 2021

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CERTIFICATE

This is to certify that

MUHAMMED RAMADAN

student of

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has completed 10 days internship training in **ROBOTICS** from 24th November 2021 at ZINDOT TECHNOLOGIES, Kochi. During this intern period, we found him/her a sincere, honest, hardworking, dedicated student with a professional attitude and very good professional knowledge.
We wish you every success in all future endeavours.

Date : 06 DECEMBER 2021

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This is to certify that

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Director
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DR. LEENA A. V.
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zindottechnologies@gmail.com

INTRODUCTION

Company Overview

Zindot Technologies is a leading provider of cutting-edge robotics and automation solutions, catering to diverse industries such as manufacturing, healthcare, logistics, and agriculture. The company is renowned for its innovative approach to solving complex problems using robotics technology. Zindot Technologies emphasizes collaboration, creativity, and practicality in developing customized robotics solutions tailored to meet specific customer needs.

Objectives of the Internship

- Gain practical exposure to robotics technologies and their applications in different industries.
- Develop hands-on skills in programming, system integration, and robotic hardware/software development.
- Contribute to ongoing projects and research initiatives to enhance my understanding of robotics.
- Learn about industry standards, safety protocols, and best practices in robotic engineering.

OVERVIEW OF THE INTERNSHIP PROGRAM

Zindot Technologies offers a dynamic and enriching internship program designed to provide students and recent graduates with practical experience and exposure to the innovative world of robotics, automation, and artificial intelligence. The internship program at Zindot Technologies is structured to offer valuable learning opportunities, hands-on projects, and mentorship from industry professionals.

Program Objectives

The primary objectives of the internship program at Zindot Technologies are as follows:

1. Skill Development: Provide interns with hands-on experience and practical skills in robotics, automation, and related technologies.

2. Exposure to Industry Projects: Involve interns in real-world projects and initiatives to gain insight into industry applications of robotics and automation.
3. Professional Growth: Foster personal and professional development through mentorship, training, and collaboration with experienced engineers and researchers.
4. Innovation and Creativity: Encourage interns to contribute fresh ideas and perspectives to ongoing projects, fostering innovation within the company.

PROJECT OVERVIEW

1. System Design and Prototyping:

Collaborate with senior engineers to conceptualize the design and architecture of the autonomous mobile robot. Utilize CAD software to create 3D models of robot components and assemblies.

2. Software Development:

Implement localization and mapping algorithms using Simultaneous Localization and Mapping (SLAM) techniques. Develop obstacle avoidance and path planning algorithms to ensure smooth and collision-free navigation.

3. Sensor Integration:

Integrate sensors such as LiDAR, cameras, and IMUs (Inertial Measurement Units) for environment perception and localization. Calibrate and optimize sensor configurations to enhance accuracy and reliability.

4. Control System Implementation:

Develop control software for motor actuators and navigation systems to enable autonomous operation. Interface with ROS (Robot Operating System) for modular software development and integration.

5. Testing and Validation:

Conduct comprehensive testing and validation of the autonomous mobile robot in simulated and real-world warehouse environments. Iterate on software algorithms and hardware configurations based on test results and performance feedback.

PRODUCT OVERVIEW

Zindot Technologies offers a comprehensive and immersive internship program aimed at providing students and recent graduates with practical experience and exposure to cutting-edge technologies in the fields of robotics, automation, and artificial intelligence. The internship program is designed to foster learning, skill development, and professional growth while contributing to innovative projects and initiatives within the company.

Program Objectives

The internship program at Zindot Technologies is structured with the following objectives:

1. Hands-on Experience: Provide interns with hands-on experience working on real-world projects and tasks under the guidance of experienced professionals.
2. Skill Development: Enhance interns' technical skills in areas such as programming, robotics, system integration, and software development.
3. Exposure to Industry Practices: Introduce interns to industry best practices, standards, and methodologies used in robotics and automation projects.
4. Mentorship and Guidance: Pair each intern with a mentor who provides guidance, feedback, and support throughout the internship period.
5. Project Collaboration: Engage interns in collaborative projects, encouraging teamwork, communication, and problem-solving skills.

CONCLUSION

The internship program at Zindot Technologies is a transformative experience that provides participants with valuable skills, practical knowledge, and industry exposure in the fields of robotics, automation, and artificial intelligence. Throughout the program, interns have the opportunity to work on innovative projects, collaborate with experienced professionals, and contribute to cutting-edge technologies.

Est. 2003

Sree Narayana Guru College of Engineering & Technology

CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307

DEPARTMENT OF MECHANICAL ENGINEERING

INTERNSHIP DETAILS

ACADEMIC YEAR : 2022-2023

Sl.No	Name	Industry	Year	Duration
1	Aadith VP	The Western India Plywoods LTD, Kannur	2022-2023	1 day
2	Abhishek K	The Western India Plywoods LTD, Kannur	2022-2023	1 day
3	Adarsh vijayakumar	The Western India Plywoods LTD, Kannur	2022-2023	1 day
4	Hrithik Anil	The Western India Plywoods LTD, Kannur	2022-2023	1 day
5	Mithun S Kumar	The Western India Plywoods LTD, Kannur	2022-2023	1 day
6	Muhammed Zenil KV	The Western India Plywoods LTD, Kannur	2022-2023	1 day
7	Sanju PV	The Western India Plywoods LTD, Kannur	2022-2023	1 day
8	Shibin Rajeevan TP	The Western India Plywoods LTD, Kannur	2022-2023	1 day
9	Sidharth K	The Western India Plywoods LTD, Kannur	2022-2023	1 day
10	Sreerag P Radhakrishnan	The Western India Plywoods LTD, Kannur	2022-2023	1 day
11	Adarsh P	The Western India Plywoods LTD, Kannur	2022-2023	1 day

FACULTY ADVISOR

HOD ME

PRINCIPAL

Dr. LEENA A V
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THE WESTERN INDIA PLYWOODS LTD.
BALIAPATAM, KANNUR – 670 010
Regd. Office: BALIAPATAM, KERALA, INDIA

Tel: 0497-2778151 (4Lines), Fax: 0497-2778181
E-mail: westernply@gmail.com/ mail@wipltd.in.
Website: www.wipltd.in, CIN-L20211 KL 1945PLC001708

March 22 ,2024

CERTIFICATE

This is to certify that the following **11** students **of B TECH MECHANICAL ENGINEERING at SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANNUR** have done an **Internship (one day)** successfully in our Organization on **11-09-2023**, as part of their curriculum requirement.

1. AADITH V P	-	**SNC21ME001**
2. ABISHEK K	-	**SNC21ME002**
3. ADARSH VIJAYAKUMAR	-	**SNC21ME003**
4. HRITHIK ANIL	-	**SNC21ME005**
5. MITHUN S KUMAR	-	**SNC21ME006**
6. MUHAMMED ZENIL K V	-	**SNC21ME007**
7. SANJU P V	-	**SNC21ME008**
8. SHIBIN RAJEEVAN T P	-	**SNC21ME009**
9. SIDHARTH K	-	**SNC21ME010**
10.SREERAG P RADHAKRISHNAN	-	**SNC21ME011**
11.ADARSH P	-	**LSNC21ME012**

GENERAL MANAGER

Dr. LEENA A V
PRINCIPAL
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PAYYANUR, KANNUR

SREE NARAYANA GURU COLLEGE OF ENGINEERING

& TECHNOLOGY

(Affiliated to APJ Abdul Kalam Technological University and approved by AICTE New Delhi)

Internship on

MANUFACTURING OF PLYWOOD RELATED PANEL PRODUCTS

at

WESTERN INDIA PLYWOODS LTD

Submitted by

AADITH V P

ABISHEK K

ADARSH VIJAYAKUMAR

HRITHIK ANIL

MITHUN S KUMAR

MUHAMMED ZENIL K V

SANJU P V

SHIBIN RAJEEVAN T P

SIDHARTH K

SREERAG P RADHAKRISHNAN

ADARSH P

DEPARTMENT OF MECHANICAL ENGINEERING

2023

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This is to certify that Industrial Training at "WESTERN INDIA PLYWOODS LTD" *is a bonafide record of the work done by* **AADITH V P, ABISHEK K, ADARSH VIJAYAKUMAR, HRITHIK ANIL, MITHUN S KUMAR, MUHAMMED ZENIL K V, SANJU P V, SHIBIN RAJEEVAN T P, SIDHARTH K, SREERAG P RADHAKRISHNAN, ADARSH P** *of fifth semester* ***DEPARTMENT OF MECHANICAL ENGINEERING*** *towards the partial fulfillment for the award of the degree of* **Bachelor of Technology** *by* APJ Abdul Kalam Technological University.

Faculty Advisor
Department of ME

Head of the Department
Department of ME

Dr. LEENA A V
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March 22 ,2024

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4. HRITHIK ANIL	-	SNC21ME005
5. MITHUN S KUMAR	-	SNC21ME006
6. MUHAMMED ZENIL K V	-	SNC21ME007
7. SANJU P V	-	SNC21ME008
8. SHIBIN RAJEEVAN T P	-	SNC21ME009
9. SIDHARTH K	-	SNC21ME010
10.SREERAG P RADHAKRISHNAN	-	SNC21ME011
11.ADARSH P	-	LSNC21ME012

GENERAL MANAGER

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PAYYANNUR, KANNUR

INTRODUCTION

Company Overview

Established in 1945 the company started manufacture of sawn timber and plywood on a modest scale with a few indigenous and lent-leased machinery. Due to the progressive outlook and relentless efforts of WIP's founder Managing Director Shri. A.K. Kaderkutty, a doyen of the wood-based panel industry in India, the company made steady progress over the years and business expanded to its present stature and is today one of the biggest woods based industrial integrated complexes in the country and also in South-East Asia with an employee strength of 1200. From the humble beginnings in 1942 as a sawmill and a tea chest manufacturing facility, W.I.P grew steadily adding the latest in machinery and incorporating new manufacturing techniques. Products ranged from Plywoods, Block boards, Flush door, Shuttering and Marine Plywood, Aircraft Plywood etc. The Company planned and executed the hardboard plant between the years 1956 and 1958 with an initial installed capacity of 12.5 tonnes of hardboard per day. The Company also installed its own synthetic resin unit in 1959 with a capacity of 200 tonnes per annum, which gradually increased to 2400 tonnes per annum, by 1975. Manufacture of densified Wood was commenced on a small scale initially as a part of the plywood plant. An Industrial Licence was obtained in 1974 for manufacture of Densified Wood with a capacity of 2000 M.T. per annum. Since then, the Company has been producing components of densified wood required mainly by the electrical, textile and chemical industries, Railways, etc. In 1974 a plant for manufacture of furniture was added.

OVERVIEW OF THE INTERNSHIP PROGRAM

The internship program at Western India Plywoods Ltd. (WIPL) is designed to provide students with valuable hands-on experience in the plywood manufacturing industry. Here's an overview of what you can expect from our internship program:

Learning Objectives: Our internship program is structured to provide interns with a comprehensive understanding of the plywood manufacturing process, from raw material sourcing to finished product distribution. Interns will gain insights into various departments such as production, quality control, supply chain management, sales, and marketing.

Exposure to Cross-functional Teams: WIPL encourages interns to interact with professionals across different departments to gain a holistic view of the business. This exposure helps interns understand how various functions collaborate to achieve organizational objectives.

Skill Development: Interns have the opportunity to enhance their technical skills, problem-solving abilities, communication skills, and teamwork capabilities through practical experiences and interactions with industry experts.

Networking Opportunities: WIPL values networking and encourages interns to participate in company events, meetings, and social gatherings. This allows interns to build relationships with professionals in the industry and expand their professional network.

Overall, the internship program at Western India Plywoods Ltd. aims to provide a meaningful and enriching experience for students, equipping them with practical skills and insights that will be beneficial for their future careers in the plywood manufacturing industry.

PROJECT OVERVIEW

At Western India Plywoods Ltd. (WIPL), projects are integral to our business operations and innovation efforts. Here's an overview of the types of projects typically undertaken at WIPL:

Product Development and Innovation:

WIPL invests in research and development projects aimed at creating new plywood products or improving existing ones. These projects involve testing new materials, exploring innovative manufacturing techniques, and ensuring product quality and performance.

Process Optimization:

Projects focused on process optimization aim to enhance operational efficiency, reduce costs, and minimize waste during plywood manufacturing. This could involve streamlining production workflows, implementing new technologies, or improving supply chain logistics.

Quality Assurance and Testing:

WIPL emphasizes quality control through projects that focus on testing plywood samples, assessing product durability, and implementing quality assurance measures. These projects ensure that our products meet industry standards and customer expectations.

Environmental Sustainability:

WIPL is committed to sustainable practices. Projects in this area focus on reducing environmental impact through initiatives such as waste reduction, energy efficiency improvements, and sourcing sustainable raw materials.

Supply Chain Management:

Projects in supply chain management aim to optimize inventory levels, improve procurement processes, and strengthen relationships with suppliers. These projects ensure smooth operations and timely delivery of raw materials.

Sales and Marketing Strategies:

WIPL undertakes projects to develop and implement sales and marketing strategies. This includes market segmentation, branding initiatives, promotional campaigns, and distribution channel optimization.

Projects at WIPL are typically collaborative efforts involving cross-functional teams comprising engineers, researchers, production specialists, marketing professionals, and external consultants. Each project is designed to address specific business needs, drive continuous improvement, and uphold WIPL's commitment to quality, innovation, and sustainability in the plywood industry.

PRODUCT OVERVIEW

Following are the products that are manufactured from Western India Plywoods Ltd.

1. **Plywood:** Plywood is a versatile engineered wood product composed of thin layers of wood veneer bonded together with adhesive. This construction method results in a strong and durable material that exhibits excellent strength-to-weight ratio and resistance to warping or cracking. Plywood is widely used in construction, furniture making, packaging, and various other applications due to its structural integrity, ease of use, and cost-effectiveness. It comes in different grades and thicknesses to suit different needs, from sheathing and subflooring in buildings to decorative panels and cabinetry in interior design.

2. **Fire Retardant Plywood:** Fire retardant plywood is a specialized type of plywood that has been treated with chemicals to reduce its flammability and delay the spread of fire. This treatment involves impregnating the wood with fire-retardant substances that react to heat and combustion, creating a barrier against flames and smoke. Fire retardant plywood is commonly used in building construction, especially in areas where fire safety regulations are stringent, such as commercial buildings, schools, hospitals, and public spaces.

3. **Resin Surfaced Shuttering Plywood:** Resin surfaced shuttering plywood, also known as film-faced plywood, is a specialized type of plywood that is coated with a layer of resin-impregnated paper or plastic film on both sides. This surface treatment enhances the plywood's durability, smoothness, and resistance to moisture, making it ideal for use in concrete formwork and shuttering applications. The resin surface provides a smooth finish that helps prevent concrete from sticking to the plywood during pouring and curing, facilitating easy removal and reducing surface defects on the finished concrete structure.

4. **Marine Plywood:** Marine plywood is a premium grade of plywood specifically designed for applications where the wood will be exposed to water or high levels of moisture. It is manufactured using durable hardwood veneers bonded together with

waterproof adhesive, making it highly resistant to water damage, rot, and fungal decay. Marine plywood is characterized by its superior strength, stability, and durability, making it suitable for use in marine and freshwater environments, including boat building, dock construction, and exterior applications where moisture resistance is essential. The construction and adhesive used in marine plywood ensure that it can withstand prolonged exposure to water without delaminating or losing its structural integrity.

5. **Boiling Water Resistant Plywood:** Boiling Water Resistant (BWR) plywood is a type of plywood that is specifically engineered to withstand exposure to moisture and humidity. It is manufactured using high-quality hardwood veneers bonded with waterproof synthetic resin under high pressure and temperature. BWR plywood is designed to be highly resistant to boiling water, making it suitable for use in applications where the wood may come into direct contact with water or moisture, such as kitchen cabinets, bathroom furniture, and outdoor furniture. The water-resistant properties of BWR plywood help prevent warping, delamination, and fungal growth, ensuring long-lasting durability and structural integrity even under challenging environmental conditions.

6. **Hard boards:** Hardboard, also known as high-density fiberboard (HDF), is a versatile engineered wood product made from compressed wood fibers. It is manufactured by refining wood fibers into a pulp and then pressing them together under high pressure and heat with the addition of a binder, usually synthetic resin. This process results in a dense and uniform board with a smooth surface and uniform texture.

7. **Densified wood:** Densified wood, also known as densified or compressed wood, is a specialized engineered wood product produced through a process that increases its density and strength. This is typically achieved by compressing wood fibers under high pressure and temperature, sometimes with the addition of adhesives or resins. The compression process significantly reduces the air pockets within the wood, resulting in a denser material with enhanced mechanical properties such as increased strength, hardness, and dimensional stability.

8. **Wooden flooring:** Wooden flooring, also known as hardwood flooring, is a popular and timeless choice for adding warmth and elegance to interior spaces. It is made from solid hardwood boards or engineered wood planks that are designed to be installed as a durable and beautiful flooring option. Solid hardwood flooring is constructed from a single piece of hardwood, such as oak, maple, or cherry, and comes in various thicknesses and widths.

9. **Soft Board:** Softboard, also known as low-density fiberboard (LDF), is a type of engineered wood product made from wood fibers that are compressed and bonded together with adhesive under heat and pressure. Unlike hardboard or plywood, softboard is less dense and more porous, resulting in a softer and more flexible material.

CONCLUSION

In conclusion, the internship program at Western India Plywoods Ltd. (WIPL) offers a valuable and enriching experience for students aspiring to gain practical insights into the plywood manufacturing industry. Interns have the opportunity to apply theoretical knowledge in a real-world setting, gaining practical skills and experience across various functions within the plywood manufacturing process. Each intern is paired with a dedicated mentor who provides support, guidance, and feedback throughout the internship, facilitating professional growth and development. Interns interact with professionals from different departments, gaining a comprehensive understanding of how various functions collaborate to achieve organizational goals. WIPL encourages interns to enhance technical skills, problem-solving abilities, communication skills, and teamwork capabilities through project assignments and day-to-day activities. Interns have the chance to build relationships with industry professionals, expanding their professional network and gaining insights into career paths within the plywood manufacturing sector. Exceptional interns may be considered for full-time employment opportunities at WIPL based on their performance and the company's hiring needs. Overall, the internship program at WIPL serves as a stepping stone for students to bridge the gap between academia and industry, preparing them for successful careers in plywood manufacturing or related fields.