



R K COLLEGE OF ENGINEERING

(Accredited by **NAAC** with '**A**' Grade)

Kethanakonda (V), Ibrahimpatnam (M), Vijayawada, AMARAVATI-521456.

A REPORT ON THE

INTERNSHIP

EMBEDED SYSTEMS, AURDINO UNO & IOT

FROM: February-April 2024

ORGANIZED BY

DEPARTMENT OF ECE

IN ASSOCIATION WITH

NARESH TECHNOLOGIES AND CONSUITANCY SERVICES

RESOURCE PERSON: - Mr. Prabhu.

**Coordinator-IQAC
RKCE**



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List of Students: -

S.No	Hall Ticket Number	Name Of the Student
1	20MC1A0401	ALLAM SURENDRA
2	20MC1A0402	ANDRA TEJASREE
3	20MC1A0403	ARLAGADDA SAI KUMAR
4	20MC1A0404	ATHYALA VINAYKUMAR
5	20MC1A0405	BAKKIREDDY DILEEP REDDY
6	20MC1A0406	BANGI PARAMESWARUDU
7	20MC1A0408	BUJULA VENKATESWAR REDDY
8	20MC1A0409	C YAMINI
9	20MC1A0410	CHALAMKOTI VENUMADHAV
10	20MC1A0411	CHAVALA PAVAN KUMAR
11	20MC1A0412	CHINNOJU HARITHA
12	20MC1A0414	CHOUTAPALLI KASTURI
13	20MC1A0415	DABBUGOTTU VENKATA PAVAN KALYAN
14	20MC1A0417	DEVARINTI RAJESH
15	20MC1A0419	ERAGADINDLA SREENU
16	20MC1A0420	GADI CHAKRADHAR
17	20MC1A0421	GANACHARI VEDAMATAM CHANDRASEKHAR
18	20MC1A0422	GANNEBOINA BRAHMAIAH
19	20MC1A0423	GARLAPATI LAKSHMI GAYATHRI
20	20MC1A0424	GATLA VENKATA BALA KRISHNA REDDY
21	20MC1A0425	GOLLA LAKSHMI KANTH
22	20MC1A0426	GOLLA VIVEKANANDA
23	20MC1A0427	GORLA GANAPATHI YADAV
24	20MC1A0428	GOTTA JAGADEESH
25	20MC1A0429	GUNDIMEDA SUNNY
26	20MC1A0430	GUNTI MANOJ KUMAR
27	20MC1A0431	ILLA HEPSIRANI
28	20MC1A0432	JANDHYAM MOHAN GANGA
29	20MC1A0433	JAVVAJI HEMANTH
30	20MC1A0434	JERRI HARI KRISHNA
31	20MC1A0436	JYOTHINAGARAM RAMU
32	20MC1A0437	KADIYALA ANUSHA
33	20MC1A0438	KASAPURAM RUPESH KUMAR
34	20MC1A0439	KATIKI VAMSIKRISHNA
35	20MC1A0440	KOLLA JAY BABU
36	20MC1A0441	KOMMURABATHINI RAVI BABU
37	20MC1A0442	KOMMURUNANDINI

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38	20MC1A0443	KONDRAGUNTA LOKANADH LITHISH CHOWDARY
39	20MC1A0444	KOTRA ARAVIND
40	20MC1A0446	MALLELA MANASA
41	20MC1A0447	MANDE TRINADH REDDY
42	20MC1A0448	MEDABALIMI HARIKA
43	20MC1A0449	MORLA SIVAKRISHNA
44	20MC1A0450	MUDEDLA SAI KIRAN
45	20MC1A0451	MULA SURYA CHAITHANYA REDDY
46	20MC1A0452	NAANUBALA NAGARJUNA
47	20MC1A0453	NALLA GOPICHAND
48	20MC1A0454	NANDYALA RAJ KUMAR
49	20MC1A0455	PANDALANENI BHARGAVI
50	20MC1A0456	PANDILLA SAI KUMAR
51	20MC1A0457	PENUGONDA SIVAMANI
52	20MC1A0458	PERAGANI NAGENDRA
53	20MC1A0459	PERAM RAMANA REDDY
54	20MC1A0460	POOSALA DEEPA
55	20MC1A0461	PUPPALA VENKATASWAMY
56	20MC1A0462	RAJAPALAM KARAN
57	20MC1A0463	REDDEM RAHUL REDDY
58	20MC1A0464	S J MAHESH
59	20MC1A0465	SANKE NAGA RAJU
60	20MC1A0466	SANNAPANENI SRAVANI
61	20MC1A0467	SHAIK ALEEM BASHA
62	20MC1A0468	SHAIK HAKEEM PASHA
63	20MC1A0469	SHAIK KHARIM NAGUL MEERA
64	20MC1A0470	SHAIK NASIMA
65	20MC1A0471	SHAIK NEKARIKANTI MABU SUBHANI
66	20MC1A0472	SINGAVARAPU HEMANTH REDDY
67	20MC1A0473	SUPRIYA B
68	20MC1A0474	TALARI VENKATAPRAKASH
69	20MC1A0475	TEJAVATHU KAVITHA
70	20MC1A0476	TELUGU NARAYANA
71	20MC1A0477	VEERAGANDHAM ASWIN KUMAR
72	20MC1A0479	VEERNI GIRI VENKATA RATNAM
73	20MC1A0480	VELICHARLA NAVEEN KUMAR REDDY
74	20MC1A0481	VEMURI SUJINI
75	20MC1A0482	YALAVARTHI ASHOK
76	20MC1A0483	YARRABOTHU KEERTHI
77	20MC1A0484	YATIRAJULA REVATHI
78	21MC5A0401	AVULA RAJSEKHAR

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79	21MC5A0402	BALINA CHANDRA MOUNIKA
80	21MC5A0403	BYRAPUNENI BARGAV SAI GOPAL
81	21MC5A0404	CHAPPARAPU OMKAR
82	21MC5A0405	CHENNAGIRI RUPAK VENKATA SAI
83	21MC5A0406	DANDIBOINA VENKATA NARENDRA
84	21MC5A0407	GADDAMEDI KRANTHI KUMAR GOUD
85	21MC5A0408	GOWRI HARSHA NAGA TEJA
86	21MC5A0409	TELLAMEKALA VAMSI
87	21MC5A0410	KOLLI MANIKANTA REDDY
88	21MC5A0411	KOPPULA SWAPNA
89	21MC5A0412	KOTA MEGHANA
90	21MC5A0413	MADDIKA HARI PRASAD REDDY
91	21MC5A0414	MATTA GOPI HARI KALYAN
92	21MC5A0415	MOKKAPATI AJAY KUMAR
93	21MC5A0416	NALAJALA RAVI KIRAN
94	21MC5A0417	PANUGANTI NARAHARI
95	21MC5A0418	PARSA NAGA BABU
96	21MC5A0419	PAVULURI DHIRUVANTH
97	21MC5A0420	PRASADAPU KEDHARNADH
98	21MC5A0421	SIRISETTY VENKATESWARLU
99	21MC5A0422	SURAGANI VENKATA SAI TEJA
100	21MC5A0423	TANGUTURI SAMUEL SAMER
101	21MC5A0424	VUGGAMUDI SANDEEP
102	21MC5A0425	YARLAGADDA NAGA BABU
103	21MC5A0426	MEDISETTI JAGADEESH BABU
104	21MC5A0427	SK HUSSAIN
105	21MC5A0428	GORIPARTHI VENU

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CONTENTS

Objective: An embedded system is a combination of hardware and software provided that both should be synchronized with each other. Some examples are as follows: industrial machines, automobiles, medical equipment, cameras, household appliances, airplanes, vending machines etc. The Arduino is an open-source computer hardware/software platform for building digital devices and interactive objects that can sense and control the physical world around them. In this course you will learn how the Arduino platform works in terms of the physical board and libraries and the IDE (Integrated Development Environment). The course will also cover programming the Arduino using C code and accessing the pins on the board via the software to control external devices. With this module student will get firm career growth in Electronics domain.

Detailed Syllabus:

a) Embedded System design: Basics

- i. Introduction to embedded systems.
- ii. Components of embedded system.
- iii. Advantages and applications of embedded systems.
- iv. Examples of real time embedded systems and how they are manufactured industry ready.
- v. Different Microcontroller Architectures (CISC, RISC, ARISC).
- vi. Internal Resources & Hardware Chips in Details.
- vii. History of AVR Microcontrollers and Features.
- viii. Memory Architectures (RAM/ROM)

b) Learning Arduino Platform

- i. Introduction to ARDUINO, ARDUINO History and Family.
- ii. Programming in Embedded-C, Concepts of C language.


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iii. General Hardware Interfacings

- LED's
- Switches
- Seven Segment Display
- Multi Segment Displays
- Relays (AC Appliance Control)
- LCD
- Buzzer
- IR Sensors
- Other Digital Sensors

c) The basic sensors and actuators using Arduino

- i. Introduction to sensors and actuators
- ii. How to connect and work with different sensors, such as Humidity,
- iii. Proximity, IR Motion, Accelerometer, Sound, Light Distance, Pressure,
- iv. Thermal etc to ARDUINO Board.
- v. Reading various sensor data on serial monitor and LCD Display.
- vi. Functioning of actuator.

d) Controlling embedded system based devices using Arduino

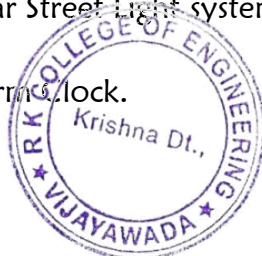
- i. Reading data from analog and digital sensors on Serial Monitor/LCD Monitor.
- ii. Work with LED Controlled by Switch/potentiometer, 7 segment displays.
- iii. How to connect relays and servomotors to ARDUINO Board.
- iv. Work with 5V/3V Power supply using voltage regulator IC'S.

e) Project Based on embedded system design using Arduino board

Students can make many projects on ARDUINO Based Embedded systems, few are listed below, i.e.:

1. ARDUINO based home automation.
2. ARDUINO Based Solar Street Light system.
3. ARDUINO Based Alarm clock.


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4. ARDUINO Based Car Parking System, etc.

f) Books / Reference material required:

1. Arduino-Based Embedded Systems: By Rajesh Singh, Anita Gehlot, Bhupendra Singh, and Sushabhan Choudhury.
2. <https://www.arduino.cc/en/Tutorial/HomePage>
3. Arduino Made Simple by Ashwin Pajankar
4. Embedded C, Pont, Michael J
5. ARM System Developer's Guide - Designing and Optimizing System Software by: Andrew N Sloss, Dominic Symes, Chris Wright; 2004, Elseiver
6. ARM System - On - Chip Architecture, Furber, Steve
7. Assembly Language Programming: ARM Cortex - M3: Mahout, Vincent

g) Job Opportunities after completing this course:

After completing this course, participants can become:

1. Embedded System Engineer.
2. Embedded Programmer.
3. Embedded software Engineer/hardware engineer.
4. Embedded System Specialist.
5. Specialist in Arduino based Embedded System Design.


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ARM BASED/ AURDINO BASED PROGRAMMING

COURSE OUTCOMES:

At the end of the Course, the Student will be able to:

- Comprehend Microcontroller-Transducers Interface techniques
- Establish Serial Communication link with Arduino
- Analyze basics of SPI interface.
- Interface Stepper Motor with Arduino
- Analyze Accelerometer interface techniques

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INTERNSHIP Completion Certificate

01/05/2024

Scanned with OKE

This is to certify that
VEERAGANDHAM ASWIN KUMAR
Student ID: 20MC1A0477
Intern ID: STU62ea0db8ec2a81659506104
College: RK College of Engineering

has successfully Completed Internship on Embedded Systems, Arduino Uno & IoT Internship Virtual Internship, during February-April 2024 at Naresh Technologies and Consultancy Services.

During this period, the intern has served as a Embedded System Intern and has displayed remarkable exceptional coordination skills and effective communication abilities.

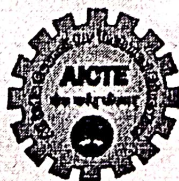
Intern has consistently approached new assignments and challenges with enthusiasm towards Embedded Systems. Intern has commitment and willingness to acquire new knowledge and skills have been evident throughout internship.

Internship Details:

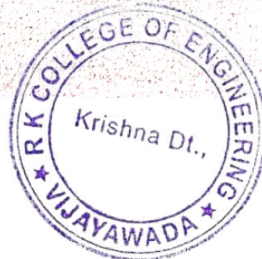
Internship ID : INTERNSHIP_170573844065ab80c836018
Location : Virtual
Duration : February to April-2024

Best regards,

Authorized Signatory



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INTERNSHIP Completion Certificate



01/05/2024

This is to certify that

M.Gopi Hari Kalyan

Student ID: 21MC5A0414

Intern ID: STU62e77bd66a3ab1659337686

College: RK College of Engineering

has successfully Completed Internship on Embedded Systems, Arduino Uno & IoT Internship Virtual Internship, during February-April 2024 at Naresh Technologies and Consultancy Services.

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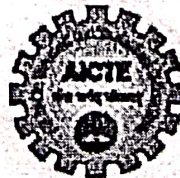
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Best regards,

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www.nareshtandcs.com

info@nareshtandcs.com

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INTERNSHIP Completion Certificate

01/05/2024

This is to certify that

Allam surendra

Student ID: 20MC1A0401

Intern ID: STU62e77893e45a91659336851

College: RK College of Engineering

has successfully Completed Internship on Embedded Systems, Arduino Uno & IoT Internship Virtual Internship, during February-April 2024 at Naresh Technologies and Consultancy Services.

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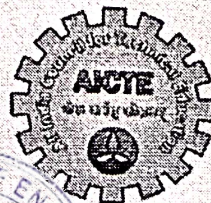
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Y. Jayawada, AMARAVATHI-521 156

Info@nareshtechnologies.com



20-402

INTERNSHIP Completion Certificate

01/05/2024

This is to certify that

Andra Tejasree

Student ID: 20MC1A0402

Intern ID: STu62f125c8a6cca1659971016

College: RK College of Engineering

has successfully Completed Internship on Embedded Systems, Arduino Uno & IoT Internship Virtual Internship, during February-April 2024 at Naresh Technologies and Consultancy Services.

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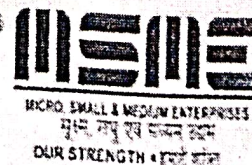
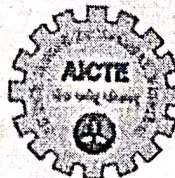
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Duration : February to April-2024

Best regards,

Authorized Signatory



www.nareshstandcs.com

info@nareshstandcs.com

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20-402

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Andra Tejasree

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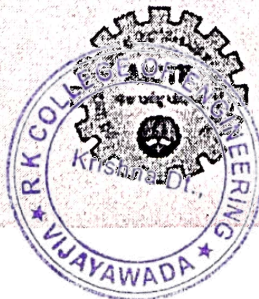
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