

# **Swami Keshvanand Institute of Technology, Management and Gramothan, Jaipur**

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING  
(IOT-CoE)**

A

REPORT

On

**Two Weeks IN-HOUSE INTERNSHIP on Internet of Things**



**Internship In-Charge**

**Dr. Yogendra Gupta  
Associate Professor, CSE**

**Coordinator (IOT-CoE)**

**Submitted To:**

**Dr. Mukesh Kumar Gupta  
Head, CSE**

<b>In-House Internship on IOT</b>	
<b>Duration: 15 Days</b> 16-08-2023 to 01-09-2023	<b>Time: 8 am to 12 am</b>
<b>Venue: IOT CoE (CL-02)</b>	<b>Year: 2<sup>nd</sup> year (CS/IT/AI/DS)</b>
<b>Convener:</b>	<b>Dr. Yogendra Gupta</b> <b>Dr. Amit Sharma</b> <b>Dr. Vinay Kanungo</b> <b>Dr. Niketa Sharma</b>
<b>Mode of Workshop: Introduction to IOT, Hands on Practice &amp; Making of Project.</b>	<b>Registered Students: <u>31</u></b> <b>Present Students : 24</b>
	<b>Present Students:</b>

### **Objective:**

The purpose of this report is to provide a comprehensive overview of my internship experience in the field of Internet of Things (IoT) with a focus on Arduino. This internship aimed to explore and apply IoT concepts using Arduino-based hardware and software solutions. The report outlines the objectives, project details, methodologies, challenges, and outcomes of the internship.

The primary objectives of the internship were as follows:

- To gain hands-on experience in IoT development using Arduino.
- To contribute to a real-world IoT project within the organization.
- To learn about hardware components and sensors commonly used in IoT.
- To enhance programming and troubleshooting skills.
- To document and share key insights and findings.

### **About the Internship:**

The Department of Computer Science & Engineering organized a 15 day internship by in-house experts on “Internet of Things” with the aim to provide hands-on practice to the students on the aspects of development for any IOT project. In this internship trainers explained that Internet of Things (IoT) refers to a network of physical devices, vehicles, appliances, and other objects embedded with sensors, software, and connectivity that enables them to collect and exchange data. They explained with various projects that interconnected devices communicate with each other and with cloud platforms, enabling remote monitoring, control, and automation of various processes. This internship was also useful in the reference of placement of students. The internship was completed under the guidance of Dr. Yogendra Gupta, Dr. Amit Sharma, Dr. Niketa Sharma and, Dr. Vinay Kanungo. Sessions at IoT CoE were concluded with a hands on experiments of IoT with integration of all the components communicated by all the trainers.

## **Hardware and Software tools:**

1. Arduino
2. Arduino IDE
3. TinkerCAD Cloud based Circuit Simulator.
4. Various Sensors, Actuators and Circuit components.

## **Outlines of the workshop:**

DAY 1: 16<sup>th</sup> Aug 23

Experiment 1. Blinking an LED using Arduino. The time delay between ON and OFF, LED should be 1 sec. Simulate first on the TinckerCad and then design hardware using breadboard.

Experiment 2. Design a 4-bit binary counter using Arduino. Simulate first on the Tinckercad and then design hardware using breadboard.

DAY 2: 17<sup>th</sup> Aug 23

Experiment 1. Understanding PWM & Arduino Analog write command.

Experiment 2. Building register divider network.

Experiment 3. Read analog voltage using Analog read command and display it using serial monitor.

DAY 3: 18<sup>th</sup> Aug 23

Experiment 1. Understanding Arduino serial port and print command.

Experiment 2. Dimmable LED project. In this project students need to control the brightness of LED using potentiometer.

DAY 4: 19<sup>th</sup> Aug 23

Experiment 1. Understanding Arduino for & while loops.

Experiment 2. Reading numbers and strings from serial monitor.

DAY 5: 21<sup>st</sup> Aug 23

Experiment 1. ON and OFF LED using PUSH button.

Experiment 2. Invert the last state of LED. That means if it is low, it will remain high when I pressed button and vice versa.

Experiment 3. Control brightness of LED using PUSH button switch. Interface two PUSH button switch one for increasing the brightness and other for decreasing the brightness.

DAY 6: 22<sup>nd</sup> Aug 23

Experiment 2. Interfacing RGB LED with Arduino.

Experiment 1. Interfacing LDR (Photoresistor) module with Arduino.

DAY 7: 23<sup>rd</sup> Aug 23

Experiment 1. Interfacing Servo motors with Arduino.

DAY 8: 24<sup>th</sup> Aug 23

Experiment 1. Interface seven segment display with Arduino.

DAY 9: 25<sup>th</sup> Aug 23

Experiment 1. Interface ultrasonic sensor with Arduino.

DAY 10: 26<sup>th</sup> Aug 23

Experiment 1. Interface temperature & Humidity sensor DHT11 with Arduino.

DAY 11: 27<sup>th</sup> Aug 23

Experiment 1. Interface PIR HC SR501 sensor with Arduino.

Experiment 2. Interface IR sensor with Arduino.

DAY 12 to DAY 15

- Live demo on Project Integration
- Problem Solving
- Project Development

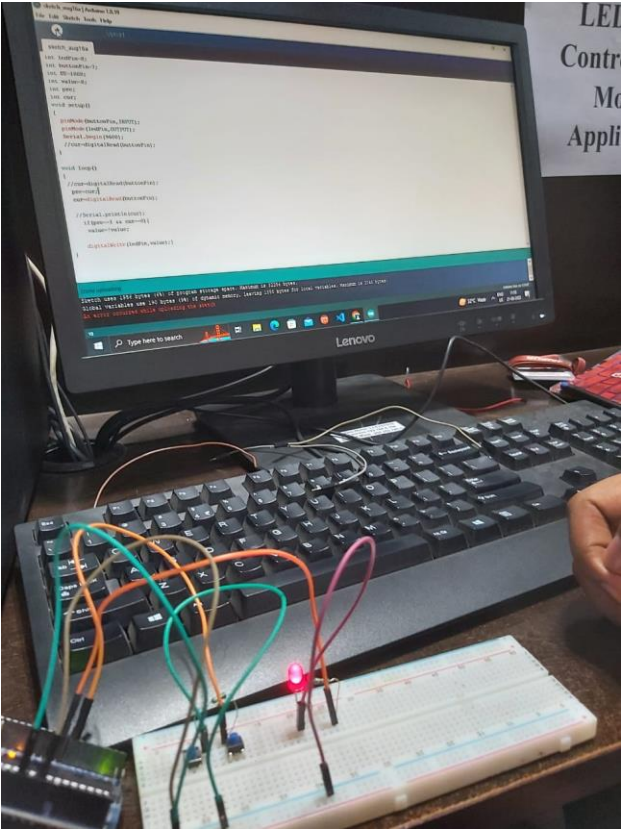
## Syllabus Covered:

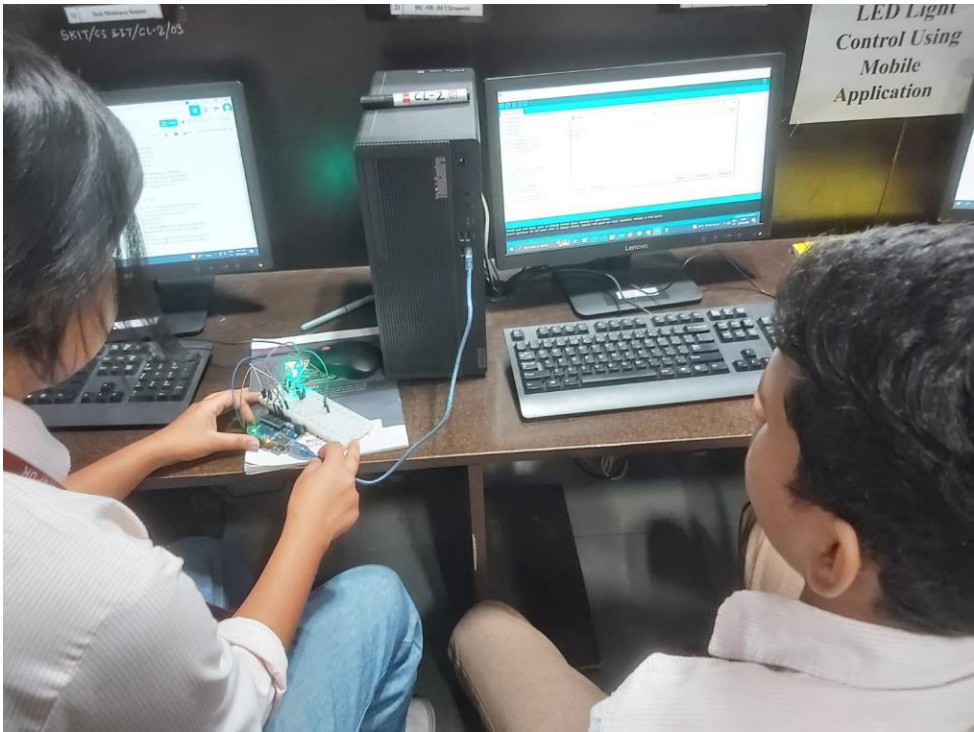
S.No	Day	Technology	Topic	Time Duration in Hours (1+3)
1-4	Day-1-4	IOT	<b>Theory</b> -Basic Electronics <b>Lab</b> - Basics of Arduino, Blinking LED using Arduino, PWM & Analog write, Register divider network, reading analog voltage using serial monitor, Understanding the Arduino serial port, uses of potentiometer.	16
5-8	Day-5-8	IOT	<b>Theory</b> - Basic Digital Electronics, <b>Lab</b> -Build LED binary counter, Dimmable LED project, Understanding Arduino for & while loops.	16
9-11	Day-9-11	IOT	<b>Theory</b> - Basics of Microprocessors & Microcontrollers <b>Lab</b> : RGB Led, Understanding and mixing primary color with RGB Led, Interfacing buzzers, relay interfacing.	12
12-13	Day-12-13	IOT	<b>Theory</b> - Embedded Systems <b>Lab</b> - Interfacing photoresistor & photodetector, motion sensor, ultrasonic sensor.	8
14-15	Day-14-15	IOT	<b>Theory</b> - Internet of Things <b>Lab</b> -Interfacing Soil moisture sensor, temperature & humidity sensor, PIR sensor.	8

## Glimpses of Internship:



Hands on Sessions:









## List of Participant

S.No.	Name	Roll No.
1	Lajvi Sharma	22ESKCS121
2	Vikas Maur	22ESKCS839
3	Aatik Kothari	22ESKCY001
4	Rishabh Mehta	22ESKCY044
5	Santoshi Swain	22ESKCYO48
6	Satwik goyal	22ESKCY050
7	Archi	22ESKCY008
8	Abhinav Sharma	22ESKCY004
9	Hemish jain	22ESKIT058
10	Parth Sarathi Sharma	22ESKCY036
11	Manoj Yadav	22ESKCY033
12	Siddharth Choudhary	22ESKCY053
13	Yash Sharma	22ESKCY059
14	Radhe Tailor	22ESKCYO43
15	Vidhyang jain	22ESKIT180
16	Arham Mehta	22ESKIT019
17	Aman Kharol	22eskit014
18	Aayushmaan Soni	22ESKCY002
19	Abhishek singh	22ESKCS007
20	Abhishek Tepan	22ESKCA007
21	Siddharth pareek	22ESKIT159
22	Harsh Sattavan	22ESKCS096
23	Sunil Sihag	22eskcx113
24	Ritesh Malav	22ESKCS182
25	Ravindan Verma	22ESKCS180
26	Shivam Bora	22ESKCS806
27	Punitive Bathla	22ESKCS173
28	Kaustubh Consul	22ESKIT076
29	Sajal kuntal	22ESKCY047
30	Devendra Kushwah	22ESKCY016
31	Shreya Heda	22ESKIT152

## Feedback from Students:

Track	Is content taught understandable?	What is your lab location ?	How many days you have attended the session (1- not satisfactory, 5-Excellent)	How do you rate Theory Sessions (1- not satisfactory, 5-Excellent)	How do you rate lab practice Sessions (1- not satisfactory, 5-Excellent)	Any Suggestion for the improvement
IOT	Yes	CL-2 (Dr. Yogender Gupta)	7	4	5	Theory class should be later.
IOT	Yes	CL-2 (Dr. Yogender Gupta)	6	4	5	None
IOT	Yes	CL-2 (Dr. Yogender Gupta)	6	5	5	No suggestion
IOT	Yes	CL-2 (Dr. Yogender Gupta)	6	5	5	None
IOT	Yes	CL-2 (Dr. Yogender Gupta)	4	4	4	
IOT	Yes	CL-2 (Dr. Yogender Gupta)	4	4	5	NO
IOT	Yes	CL-2 (Dr. Yogender Gupta)	5	3	5	improve the way of theory and dont be so slow in practical sessions
IOT	No	CL-2 (Dr. Yogender Gupta)	7	4	5	None
IOT	Yes	CL-2 (Dr. Yogender Gupta)	7	5	5	None
IOT	Yes	CL-2 (Dr. Yogender Gupta)	5	5	5	Good
IOT	Yes	CL-2 (Dr. Yogender Gupta)	7	5	5	NONE
IOT	Yes	CL-2 (Dr. Yogender Gupta)	6	5	4	None
IOT	Yes	CL-2 (Dr. Yogender Gupta)	7	4	4	None

**Content Relevant:**

An IoT (Internet of Things) internship is designed to provide participants with hands-on experience and knowledge about creating connected devices and systems.

Workshop Output: Every student has developed a project in a group of 4 students and will present a project in ITR on a real time project.

**Conclusion:**

In this workshop the students were introduced to topics in IOT. Students got an idea how to interface various sensors and actuators to microcontroller. All the students really appreciated the contents that were discussed,they realized that interactions like these can help them improve their learning. Students showed keen interest in attending more workshops like this in future.



