Details of Value Added Course conducted

Sl. No.	Information	Details
1.	Title of the Value Added Course	Introduction to Internet of Things
2.	Coordinators	Dr. Sharada M. Kori, Prof. Shubhada S. Kulkarni
3.	Name of Resource person	Dr. Sharada M. Kori, Prof. Shubhada S. Kulkarni, Mr. Hariharan V.
4.	Designation , experience and company address of Resource person	Assistant Professor, 16 years, Department of Computer Science & Engineering, Belagavi Assistant Professor, 24 years, Department of Computer Science & Engineering, Belagavi Co-Founder Space Zee, Technical head SWIFY, 4 years, 626, JVL Plaza, Anna Salai, Satya Murthy Nagar, Teynampet, Chennai, Tamil Nadu 600035
5.	Mobile number of Resource person	7026389654, 8050301976, 7904608170
6.	Email id of Resource person	smkori@git.edu, sskulkarni@git.edu, hari@spacezee.in
7.	Target Audience	3rd semester UG students
8.	Date of event	7th – 12th March 2022.
9.	Time of event	10:00 AM- 05:00 PM
10.	Registrations	24 (12)
11.	Google Meet Link	NA (COURSE CONDUCTED IN OFF-LINE MODE)
12.	Summary of student feedback	Students expects this kind of hands on courses on IoT. Few students are interested in biomedical based IoT applications. Project based learning helped them to understand the concepts more thoroughly. Daily activities like Crossword Puzzle, Technical Dumb Charades, Rapid fire questions, expert talk, Kahoot quiz, case studies, mini projects created interest among students.
13.	Outcome (in 1 to 2 sentences)	At the end of the course, students were able to: • Understand the basics of Embedded Systems. • Understand the scope of IoT in Automation. • Program Arduino for various IoT applications. • Use various sensors and actuators with Arduino. • Know the prerequisites to take up IoT projects.

Coordinators H.O.D.

Dr. Sharada M. Kori, Prof. Shubhada S. Kulkarni

Value added course

on

“Introduction to Internet of Things”

(7th- 12th March 2022)

Course Content and Schedule:

DURATION: 30 HOURS

TIME	EVENTS
DAY-1	
10:00 AM-01:00 PM	INTRODUCTION TO EMBEDDED SYSTEMS
02:00 PM- 05:00 PM	HANDS ON SESSION: ARDUINO IDE INSTALLATION, INTRODUCTION TO ARDUINO PROGRAMMING
DAY-2	
10:00 AM-01:00 PM	INTRODUCTION TO IoT.
02:00 PM- 05:00 PM	HANDS ON SESSION: ARDUINO PROGRAMMING: SIMPLE I/O PROGRAMMING.
DAY-3	
10:00 AM-01:00 PM	INTRODUCTION TO VARIOUS SENSORS.
02:00 PM- 05:00 PM	HANDS ON SESSION: ARDUINO PROGRAMMING: SENSORS INTERFACING.
DAY-4	
10:00 AM-01:00 PM	INTRODUCTION TO VARIOUS SENSORS.
02:00 PM- 05:00 PM	HANDS ON SESSION: ARDUINO PROGRAMMING: SENSORS INTERFACING.
DAY-5	
10:00 AM-01:00 PM	INTRODUCTION TO THINGSPEAK CLOUD
02:00 PM- 05:00 PM	HANDS ON SESSION: SENDING/ RECEIVING DATA TO/ FROM CLOUD
DAY-6	
10:00 AM-01:00 PM	MINI PROJECT BY THE PARTICIPANTS.

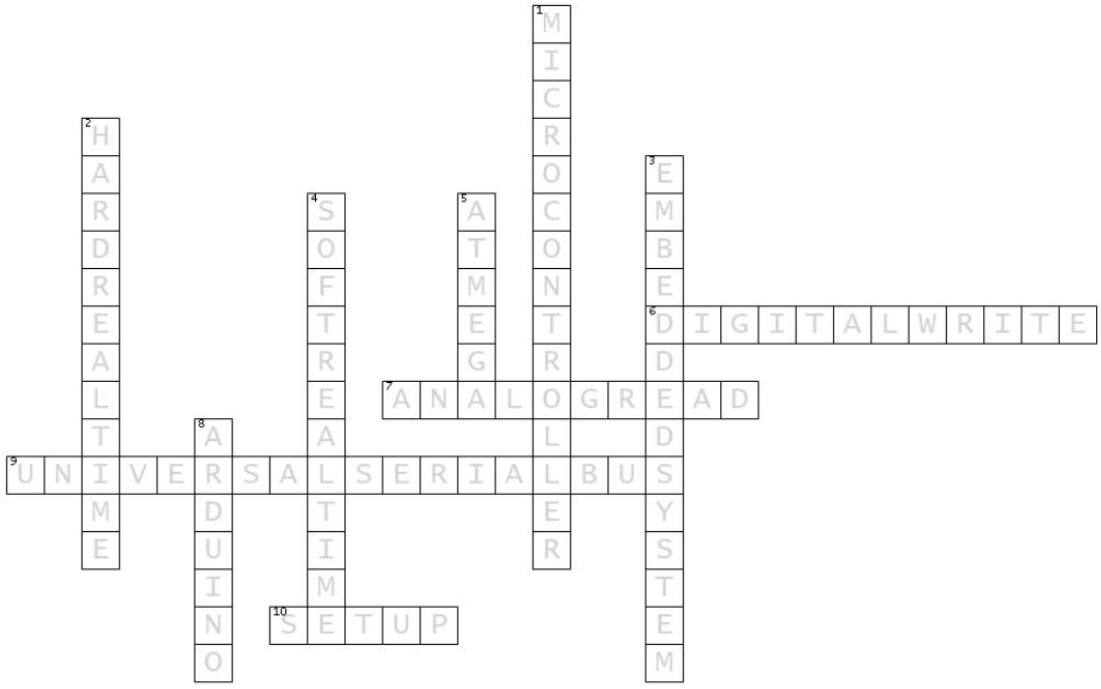
2. Activities Conducted

Cross-word Puzzle

PUZZLEMAKER
CREATE YOUR OWN PUZZLES

Puzzlemaker is a puzzle generation tool for teachers, students and parents. Create and print customized word search, criss-cross, math puzzles, and more-using your own word lists.

Introduction to Embedded Systems



ACROSS
6. --- is used to Write a HIGH or a LOW value to a digital pin.
7. ---- Reads the value from the specified analog pin.
9. USB stands for --
10. function is called when a sketch starts. It is used to initialize variables, pin modes, start using libraries, etc.

DOWN
1. is a single silicon chip with memory and all Input/Output peripherals on it
2. Systems with strict deadlines are called --- systems.
3. that has computer hardware with software embedded in it as one of its components.
4. In some embedded systems, deadlines are imposed, but not adhering to them once in a while may not lead to a catastrophe and are called ---
5. 28 ---- is a 8-bit microcontroller that processes the sketch you programmed.
8. ---- is an open-source electronics platform based on easy-to-use hardware and software.

Use the clues to fill in the words above.

Words can go across or down.
Letters are shared when the words intersect.

10 of 10 words placed.

2. Activities Conducted

Rapid fire questions

1. Which language is a typical Arduino code based on? C/ C++
2. Which language is the Arduino IDE built on? Java
3. How many analog pins are used in Arduino UNO: 6
4. Arduino IDE consists of 2 functions. What are they? Setup(), loop()
5. Arduino Codes are referred to as _____ in the Arduino IDE. Sketch
6. Which microcontroller is used in Arduino UNO? ATmega328
7. How many times does the setup() function run on every startup of the Arduino System? 1
8. What are the two modes that the pinMode() method sets for a particular pin? INPUT & OUTPUT
9. How many voltage levels are present when a pin uses digitalWrite()? 2
10. How many arguments does the digitalRead() function have? 1
11. Can the setup() function change the value of constant variables? No, it cannot change
12. How many times does the loop() function run on every startup of the Arduino System? Infinitely till the power is supplied to the Arduino
13. Can the loop() function be used to call another function that is custom defined by the programmer? Yes, it can call
14. What is the resolution of analog readings on the Arduino Uno? 5V/1024
15. What are the voltage levels that can be detected if a pin is set to OUTPUT using the pinMode() method and the analogRead() method is used, in the Arduino Uno? 0 to 5 V
16. Which Arduino Boards use the Atmega328? Arduino UNO
17. The Atmega328 is an _____ bit microcontroller: 8
18. An embedded system is a combination of _____. Hardware & Software
19. Missed deadlines causes severe damage in case of hard real time systems: True
20. Missed deadline results in unhappy customers in case of soft real time systems: True
21. Microcontroller is called System on Chip: True
22. Microprocessor is a complete computer on chip: False
23. Use of microprocessors increases the complexity of the embedded system design process. True
24. Timers are used to create delay: True
25. Atmega 328 has – MHz crystal oscillator. 16 MHz
26. Devices connected to internet are called: Internet of things: True
27. Smart watch, washing machine, mp3 player are examples of embedded systems. True
28. Arduino UNO has ---- digital I/O pins: 14
29. Arduino uses serial data transmission: True
30. Baud rate specifies: the rate at which the data bits are transmitted.

2. Activities Conducted

TECHNICAL DUMB CHARADES

ROUND1: **ACT**

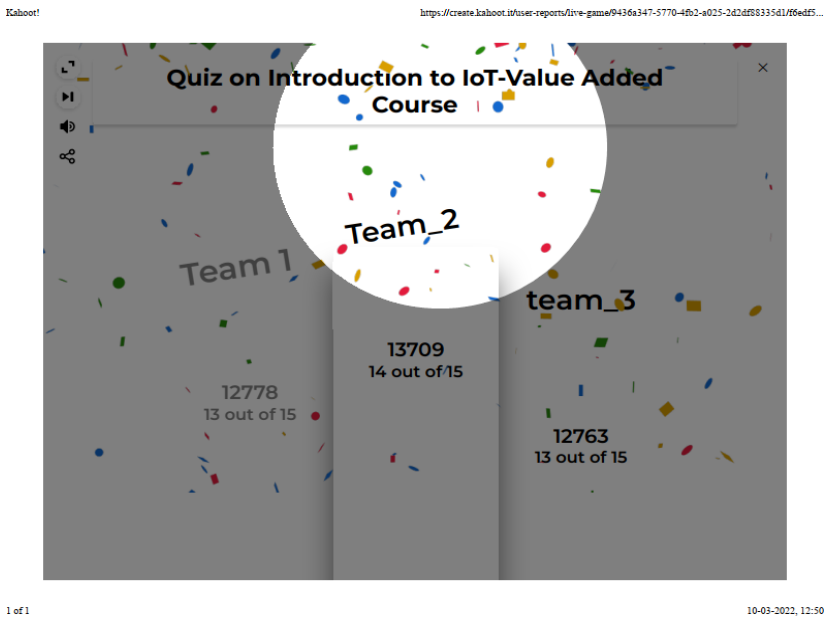
WORDS: INTERNET OF THINGS, EMBEDDED SYSTEMS, OPERATING SYSTEM, WI-FI, HARD REAL TIME SYSTEMS

ROUND2: **DRAWING**

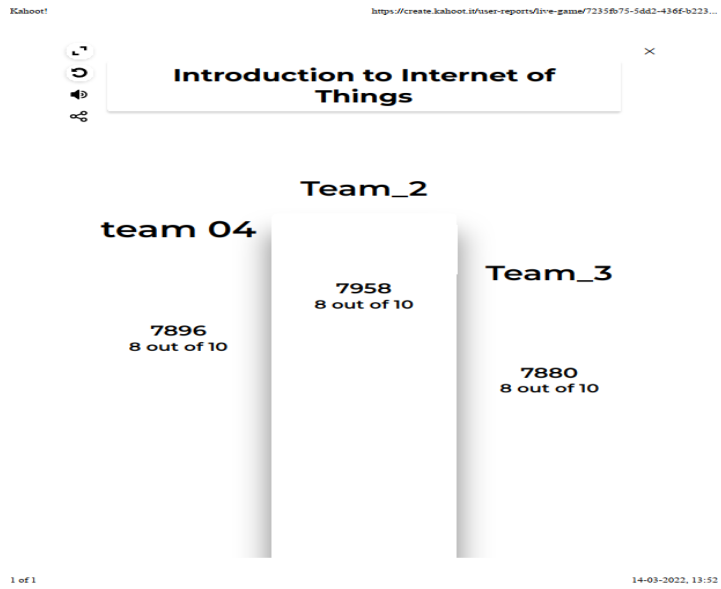
WORDS: SMART PHONE, PROGRAMMING, NETWORK, ARDUINO, SENSOR

2. Activities Conducted

Kahoot Quiz1



Kahoot Quiz 2



2. Activities Conducted

List of Mini projects

1. Interface seven segment display with Arduino to generate 2-digit Odd sequence.
2. Interface seven segment display with Arduino to generate 2-digit down counter.
3. Implement a 2-digit Even sequence generator using seven segment display.
4. Interface LCD to display the left to right scrolling message “Welcome to GIT “.
5. Interface LCD to display the right to left scrolling message “Welcome to CSE “.
6. Implement Elevator using 4 switches and LEDs.
7. Interface LDR with Arduino to display the darkness and brightness on Serial Monitor/LCD and turn ON buzzer for brightness and turn OFF for darkness.
8. Interface DHT11 temperature sensor to display Temperature and Humidity on Serial Monitor/LCD and turn ON buzzer if temperature exceeds 25 degrees centigrade.
9. Interface Ultrasonic sensor with Arduino to detect the obstacle and display appropriate message on LCD and Serial Monitor.
10. Implement Smoke Detection System by interfacing Gas sensor with the Arduino.
11. Interface DHT11 temperature sensor to display Temperature and Humidity on Serial Monitor/LCD and turn ON buzzer if temperature is below 25 degrees centigrade.
12. Implement Smart Irrigation System using soil moisture sensor. When the moisture content is less than 50%, turn ON the buzzer and display the message “Watering Required” on LCD and serial Monitor, otherwise display “Sufficient Water” on LCD and serial Monitor.

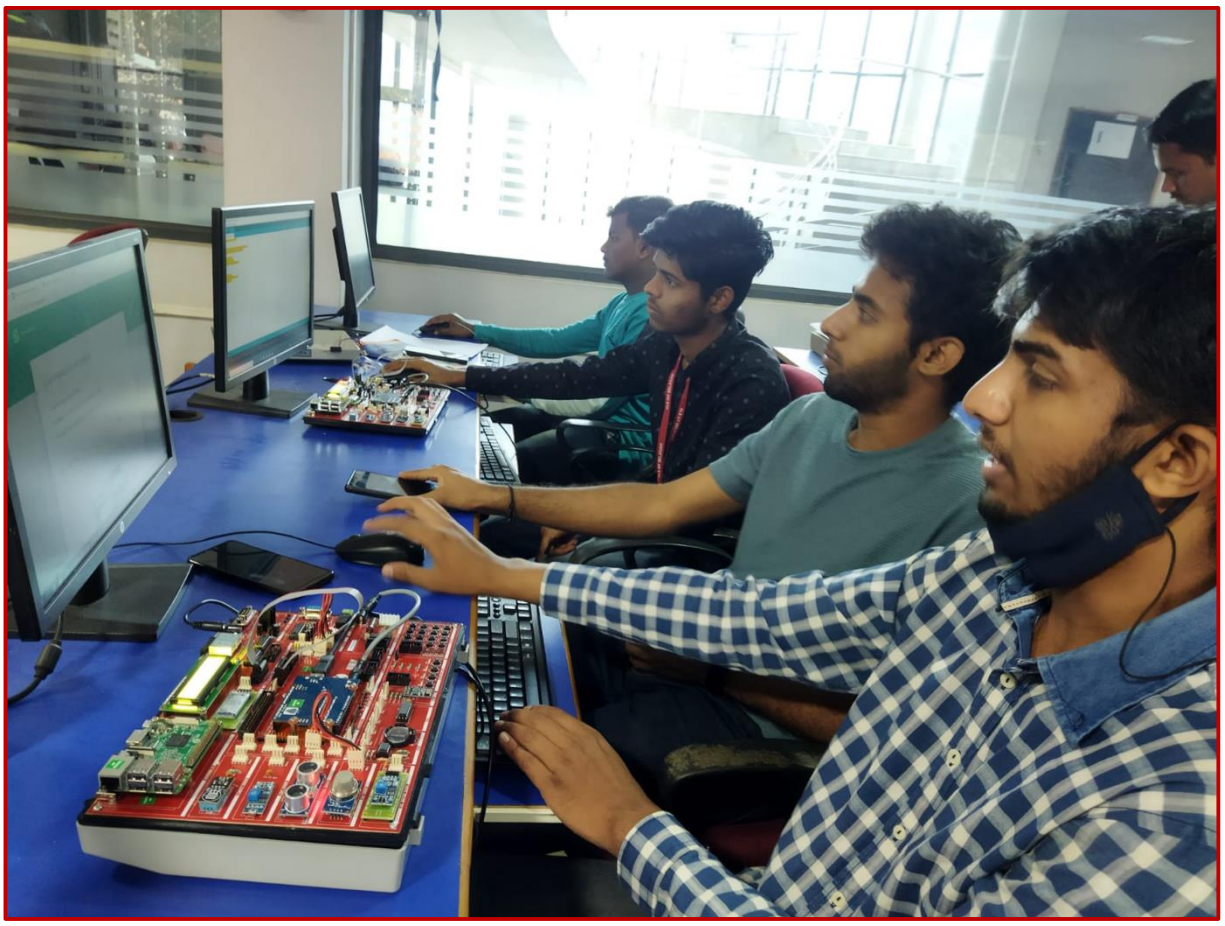
2. Activities Conducted

Case Study

1. Home Automation: Smart Appliances
2. Home Automation: Intrusion Detection
3. Forest Fire Detection
4. Waste Management
5. Smart Irrigation
6. Health care monitoring

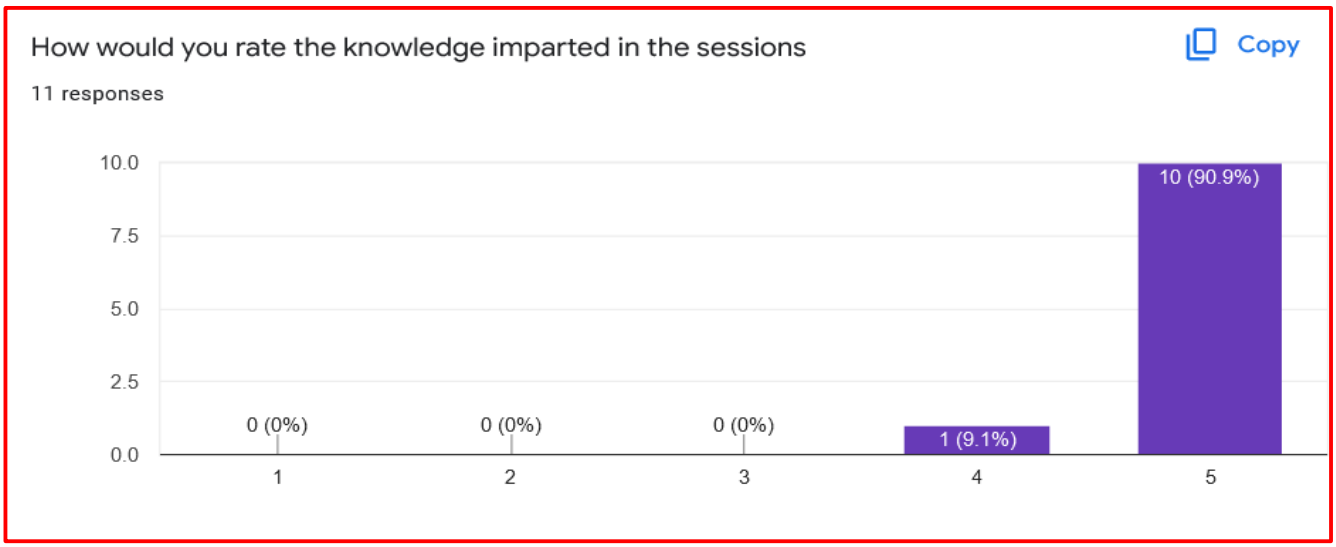
3. Photos of the value added course: Technical Dumb Charades

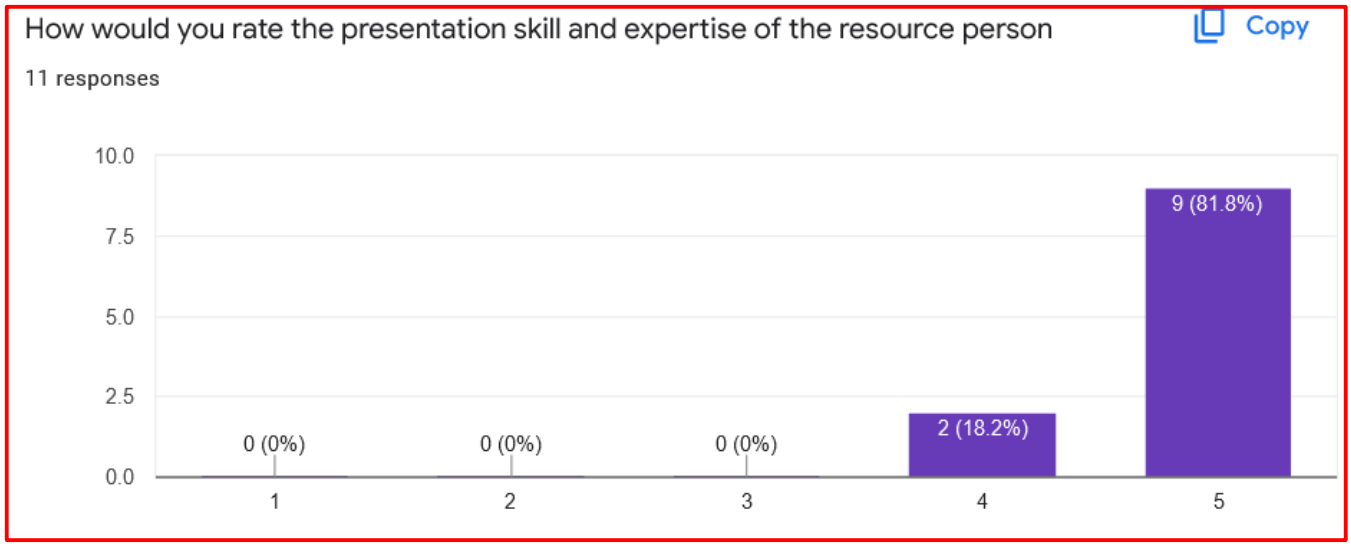
Mini Project

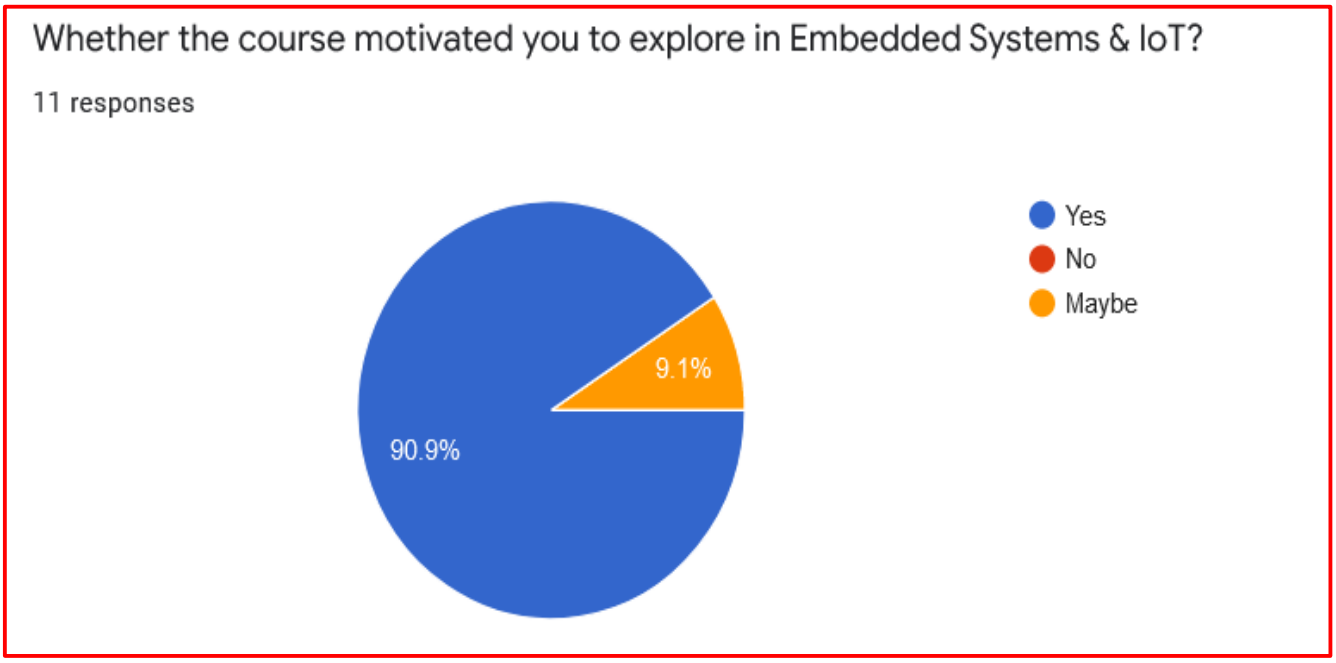


HoD addressing the participants

4. Student Feedback



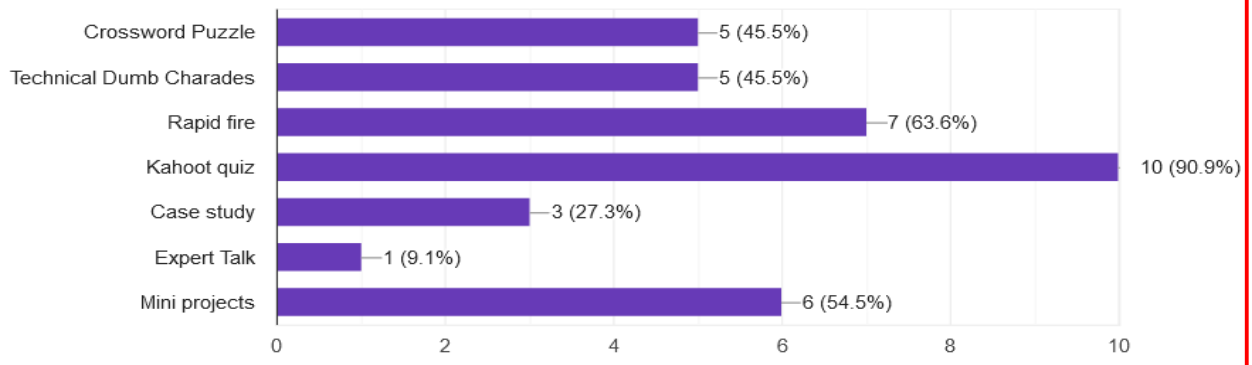




Which of the following daily activities motivated you in learning the concepts? (Select one or more)

Copy

11 responses



Overall Evaluation of the Value Added Course

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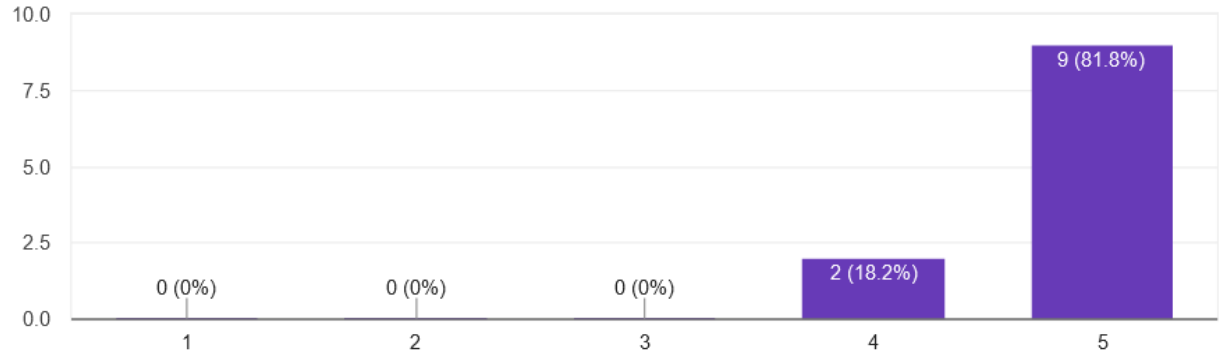
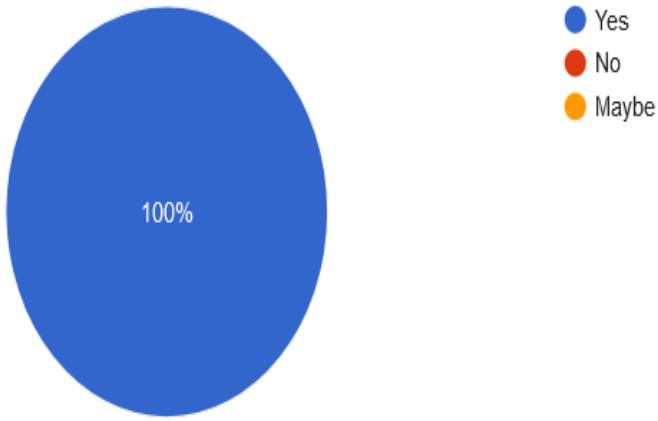
11 responses



Whether willing to attend such courses in future if organized by the same team?

Copy

11 responses



Takeaways from this Value Added Course

11 responses

I am totally motivated to look forward in the field on Internet of Things.

Good enthusiasm, importance of embedded system, learning in groups along with different people.

Learnt implementation of sensors, lcd etc using softwares like arduino

Knowledge of Arduino board , various type of sensors , building projects using IOT concept and their application in various domains.

This value added course has increased the curosity of Arduino in me.

An exact meaning to IOT, we got to know.

Learned about the basics of IoT and Arduino board and its implementation using the Arduino IDE

We have learned a lot of things associate with ardunio uno and how the embedded system works, also enjoyed the session with different activities.

Door open to IOT field to explore many things

Helpful

Any other suggestions

11 responses

Nothing

No, I am satisfied with current guidance, Thank You!

Nothing

Pls be conducting such , value added courses.

Keep conducting such value added courses

No suggestion

No suggestions

Nothing.its just awesome

No other suggestions