LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING (AI&ML)

REPORT

on

A Three-Day Workshop on "Hands-On with IoT: Fundamentals and Applications"

(16th – 18th October 2023)

Academic Year	**:** *2023 – 24*
Event Type	**:** *A Three-Day Workshop*
Event Title	**:** *Hands-On with IoT: Fundamentals and Applications*
Date/s	**:** *16/10/2023 to 18/10/2023*
Venue	**:** *SONET HALL, 2nd Floor, Block – 1*
Resource Person	**:** *Mr. S. Pradeep Kumar, Director, Smart Homes & Industrial Solution*
Convener	**:** *Dr. S. Jayaprada, Professor & HOD – CSE (AI&ML)*
Coordinators	**:** *Dr. K. Devi Priya, Assoc. Prof., Dept. of CSE.*
	: *Mr. P. Jagadeeswara Rao, Sr. Asst. Prof., Dept. of CSE (AI&ML)*
	: *Mr. B. Rajendra Prasad, Sr. Asst. Prof., Dept. of CSE (AI&ML)*
Target Audience	**:** *B.Tech. V Sem.*
Total Participants	**:** *72 Students*

Objective of the Event:

The main objective of this event is to provide participants with a comprehensive understanding of IoT Fundamentals and its Applications, IoT Cloud: creation of dashboard and data streams, App: configuration on smart phone through hands-on exercises.

Learning Objectives:

- Familiarize participants with IoT hardware components such as Arduino, Raspberry Pi, and sensors.
- Understand the basics of circuit design and breadboarding for IoT projects.
- Provide hands-on coding experience for reading sensor data and controlling actuators.
- Guide participants in developing a simple IoT application relevant to their interests or industry.

Date: 16/10/2023

Inauguration:

This workshop was inaugurated by ***Dr. M. Srinivasa Rao, Dean of Academics, LBRCE*** and ***Dr. S. Jayaprada, HOD – CSE (AI&ML) and Convener*** of this Workshop, along with the ***Resource Person Mr. S. Pradeep Kumar, Director, Smart Homes & Industrial Solution*** and ***Coordinators of the workshop Dr. K. Devi Priya, Mr. P Jagadeeswara Rao, Mr. B. Rajendra Prasad.***

Ms. B. Kavya Samitha Reddy, Presenter welcomed all the dignitaries on to the dais. In her welcome speech, she highlighted the importance and objectives of organizing this workshop. After that, she invited ***Dr. M. Srinivasa Rao*** and ***Dr. S. Jayaprada*** to give their valuable insights on the workshop.

Our Convener, ***Dr. S. Jayaprada***, in her inaugural speech thanked the Management and Principal for accepting our proposal and granting the funds to conduct this workshop. She thanked all the participants who registered for this workshop and Resource Person Mr. S. Pradeep Kumar, Director, Smart Homes & Industrial Solution, for accepting our request irrespective of his busy schedule. She added the importance of IoT Fundamentals and its Applications, IoT Cloud: creation of dashboard and data streams, App: configuration on smart phone. She requested everyone in this workshop to learn the concepts, which will help them in identifying /developing some IoT real-time applications in this various area.

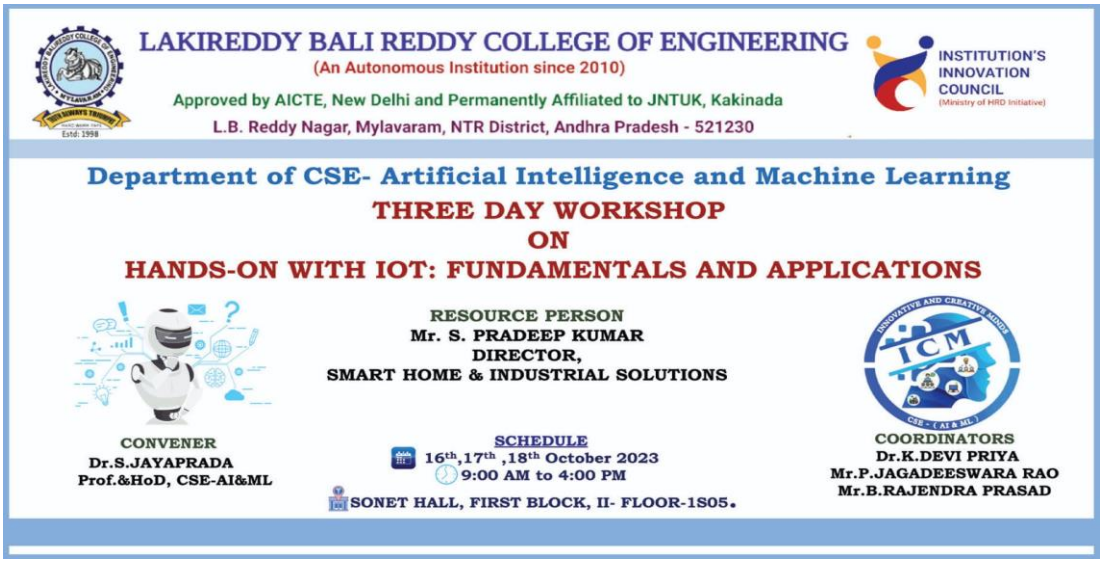

Fig. 1: Welcome Banner of Workshop

Fig. 2: 16/10/2023 – Ms. Kavya Samitha Reddy, Presenter welcoming Dignitaries

Fig. 3: 16/10/2023 – Dignitaries and Resource Person on Dais

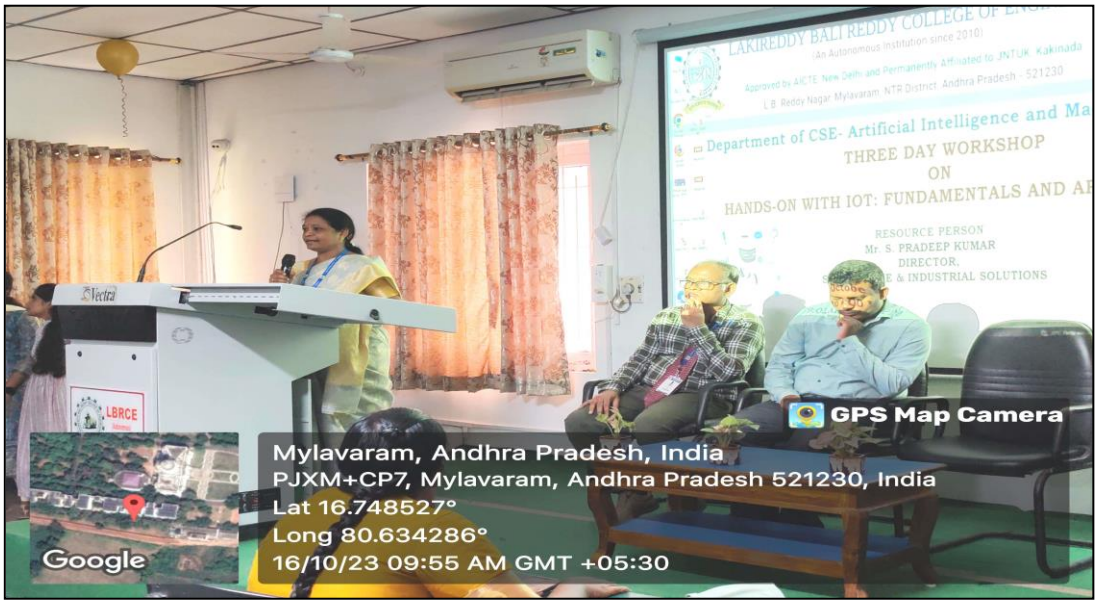

Fig. 4: 16/10/2023 – Inaugural Speech by Dr. S. Jayaprada, HOD & Convener

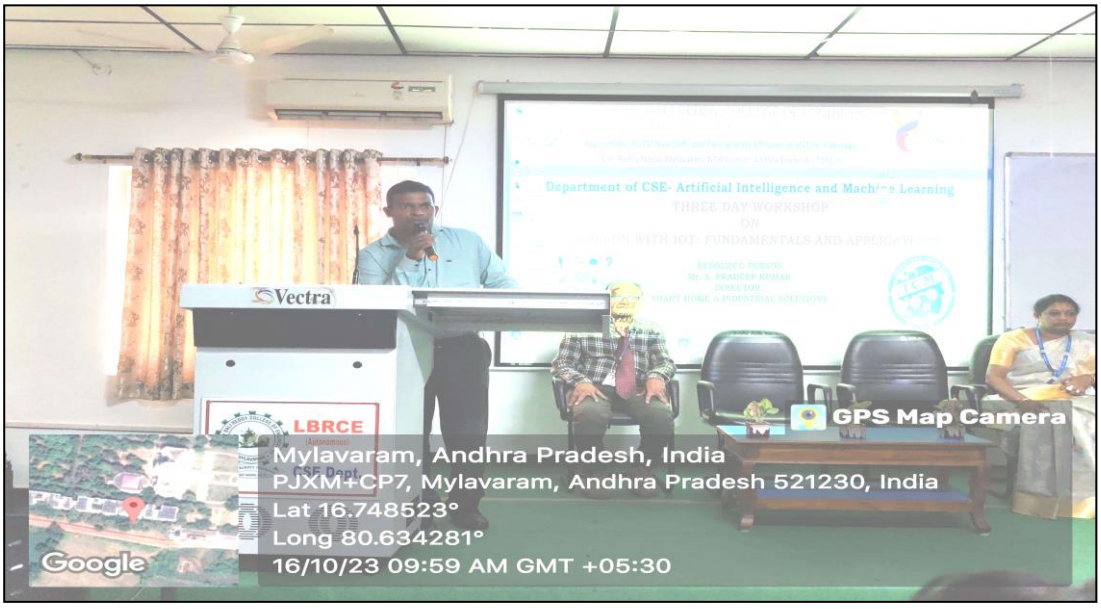

Fig. 5: 16/10/2023 – Inaugural Speech by Mr. S. Pradeep Kumar, Resource Person

Fig. 6: 16/10/2023 – V Sem. Students Participated in Workshop

Day 1: 16/10/2023 [Session: II]

Topic:

- Simulation of LED and 7 segment display using Thinker Cad Software with C++ and Wowki software with python.
- Introduction & Getting Started with IoT, Thonny IDE and Raspberry Pi Pico W
- Introduction to IoT and its Applications Thonny IDE:

Day 2: 17/10/2023 [Session: I]

Topic:

- Configuration of Raspberry Pi Pico W on Thonny IDE and IoT Cloud.
- IoT Cloud: Creation of Dashboard and Data streams, App: Configuration on Smart Phone
- Communication of Raspberry Pi Pico W with Sensors and Actuators
- Introduction to Sensors and Actuators, Communication of Raspberry Pi Pico W with
- Sensors and Actuators (RGB Led, Temperature & Humidity Sensor, Relay etc.)

Day 2: 17/10/2023 [Session: II]

Topic:

- Programming of Raspberry Pi Pico W
- Program to read and update sensors data over cloud
- Program to continuously monitor sensor readings through internet
- IoT App configuration to get notification on smart phone
- Program to read and update sensors data over cloud

Day 3: 18/10/2023 [Session: I]

Topic:

- Communication of IoT applications with Google firebase cloud Communication and data, visualization using Python
- Creating IoT System using Thingspeak Platform
- Introduction to Thingspeak Cloud Creating dashboard with indicators and real time data streaming plots
- Enabling data visualization Accessing Sensors data with Thingspeak Cloud

Day 3: 17/10/2023 [Session: II]

Valedictory & Feedback:

On the Valedictory Session, Honourable ***Dr. K Appa Rao, Principal, LBRCE*** and ***Dr. S Jayaprada, HOD-CSE(AI&ML)***, ***Convenor*** joined the event to give their valuable insights on the workshop. And Coordinators of the workshop ***Dr. K Devi Priya, Mr. P Jagadeeswara Rao, and Mr. B Rajendra Prasad*** have been joined along with the ***Resource Person Mr. S. Pradeep Kumar, Director, Smart Homes & Industrial Solution***.

Ms. B. Kavya Samitha Reddy, Presenter welcomed all the dignitaries on to the dais. In her welcome speech, she highlighted the key takeaways and objectives of organizing this Three-Day Workshop. After that, she called some of the students to share their feedback on this workshop. Total four participants shared their feedback. Out of them, one of the participants named

Mr. Vasireddy Aarya Chowdary (21761A4262) shared his feedback and stated that "Before attending to this workshop, he doesn't have any knowledge on IoT Applications. But now, he was very happy that he can integrate a bot in industry and curriculum. He requested that these types of workshops should be organized more and make the students to get the industrial exposure. He thanked resource person for taking his time and training them from scratch. At the end, he thanked our college Management, Principal, HOD and Resource Person for training them on advanced topics".

At the end of the valedictory session, vote of thanks was given by Ms. B. Kavya Samitha Reddy, in which she has been paid her gratitude towards all the participants who spared their valuable time for attending this workshop. Then she thanked the Resource Person for accepting the request and taking sessions in the workshop. After that, she thanked every faculty member and supporting staff of the department for supporting these days to complete this workshop in successful manner. She also thanked the Resource Person, Principal, Head of the Department, Coordinators, and Management for giving him this valuable opportunity.

Fig. 13: 18/10/2023 – Student (Mr. Vasireddy Aarya Chowdary) sharing his Feedback

Fig. 17: 18/10/2023 – Felicitating the Resource Person by Principal, Dr. K Appa Rao

Fig. 17: 18/10/2023 – Distributing the Certificates to Participants by Principal, Dr. K Appa Rao

Certificates Issued to Participants: (Sample)

CERTIFICATE

OF PARTICIPATION

INSTITUTION'S INNOVATION COUNCIL (Ministry of HRD Initiative)

This is to Certify that Shaik Zaiban (21761A4251) *has completed a workshop on*

"Hands -On with IoT: Fundamentals and Applications"

(from 16/10/2023 to 18/10/2023)

organized by

the Department of CSE-(AI&ML), Lakireddy Balireddy College of Engineering

in collaboration with Smart Home & Industrial Limited.

Mr.S.Pradeep Kumar
Director, SHIL

Dr.S. Jayaprada
Convener

Dr.K. Appa Rao
Principal

CERTIFICATE

OF PARTICIPATION

INSTITUTION'S INNOVATION COUNCIL (Ministry of HRD Initiative)

This is to Certify that M. Surya Rohith (2276 SA 4203) *has completed a workshop on*

"Hands -On with IoT: Fundamentals and Applications"

(from 16/10/2023 to 18/10/2023)

organized by

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in collaboration with Smart Home & Industrial Limited.

Mr.S.Pradeep Kumar
Director, SHIL

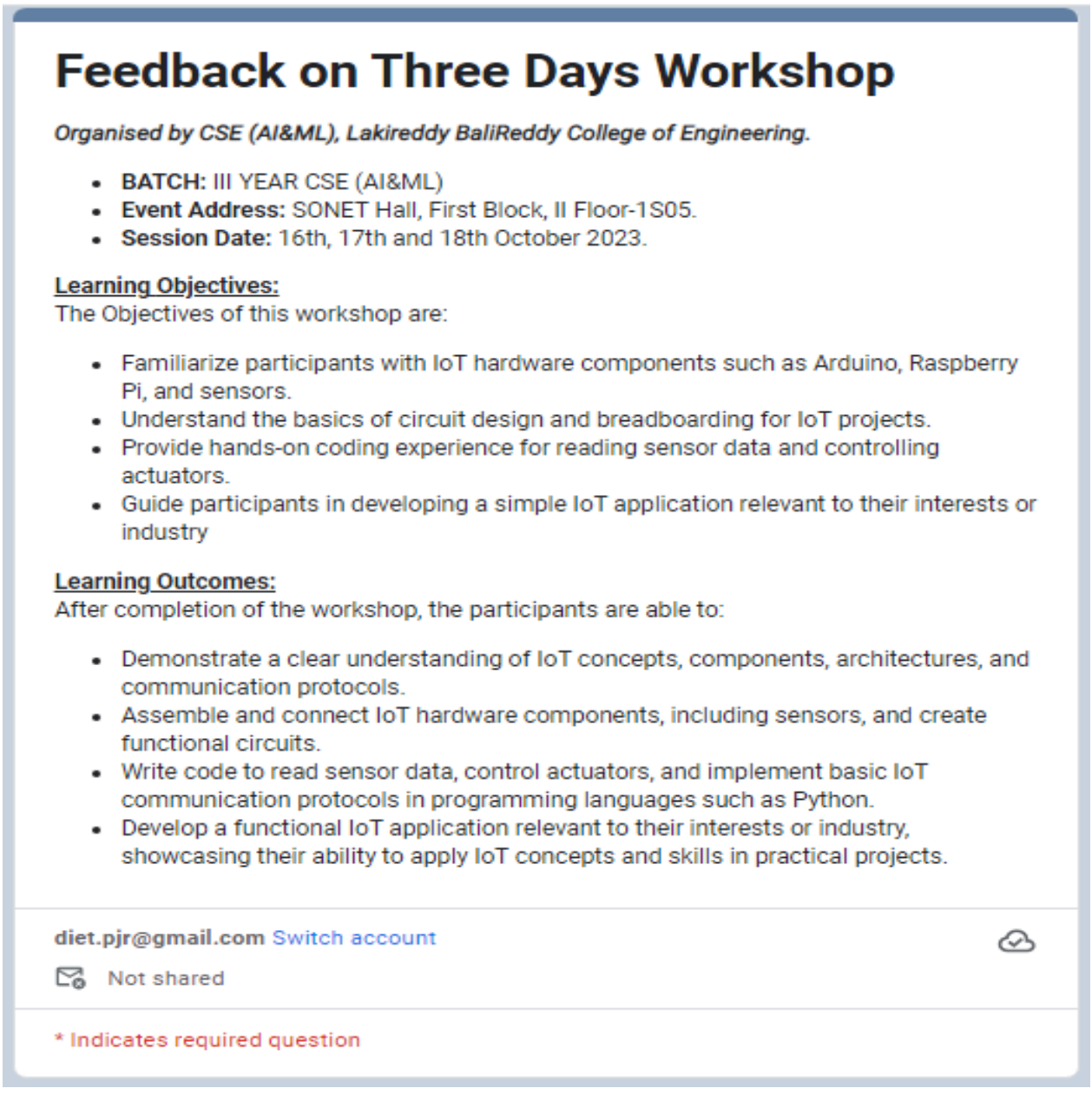
Dr.S. Jayaprada
Convener

Dr.K. Appa Rao
Principal

Learning Outcomes / Impact Analysis:

- Demonstrate a clear understanding of IoT concepts, components, architectures, and communication protocols.
- Assemble and connect IoT hardware components, including sensors, and create functional circuits.
- Write code to read sensor data, control actuators, and implement basic IoT communication protocols in programming languages such as Python.
- Develop a functional IoT application relevant to their interests or industry, showcasing their ability to apply IoT concepts and skills in practical projects.

Feedback – Google Form Shared to All Participants:



Feedback on Three Days Workshop

Organised by CSE (AI&ML), Lakireddy BaliReddy College of Engineering.

- **BATCH:** III YEAR CSE (AI&ML)
- **Event Address:** SONET Hall, First Block, II Floor-1S05.
- **Session Date:** 16th, 17th and 18th October 2023.

Learning Objectives:
The Objectives of this workshop are:

- Familiarize participants with IoT hardware components such as Arduino, Raspberry Pi, and sensors.
- Understand the basics of circuit design and breadboarding for IoT projects.
- Provide hands-on coding experience for reading sensor data and controlling actuators.
- Guide participants in developing a simple IoT application relevant to their interests or industry

Learning Outcomes:
After completion of the workshop, the participants are able to:

- Demonstrate a clear understanding of IoT concepts, components, architectures, and communication protocols.
- Assemble and connect IoT hardware components, including sensors, and create functional circuits.
- Write code to read sensor data, control actuators, and implement basic IoT communication protocols in programming languages such as Python.
- Develop a functional IoT application relevant to their interests or industry, showcasing their ability to apply IoT concepts and skills in practical projects.

diet.pjr@gmail.com Switch account

Not shared

* Indicates required question

Theoretical Content of the Workshop *

- ◯ Excellent
- ◯ Good
- ◯ Satisfactory
- ◯ Not Satisfactory

Concepts Explanation and Elaboration. *

- ◯ Excellent
- ◯ Good
- ◯ Satisfactory
- ◯ Not Satisfactory

Did the Workshop Meet the Specified Learning Objectives and Outcomes ? *

- ◯ Yes
- ◯ No

How Would you Rate the Overall Experience in terms of Usefulness & Effectiveness for your Regular Teaching/Research Work? *

	1	2	3	4	5	
Low Rating - Poor	◯	◯	◯	◯	◉	High Rating - Very Good

Any Other Suggestions

Your answer

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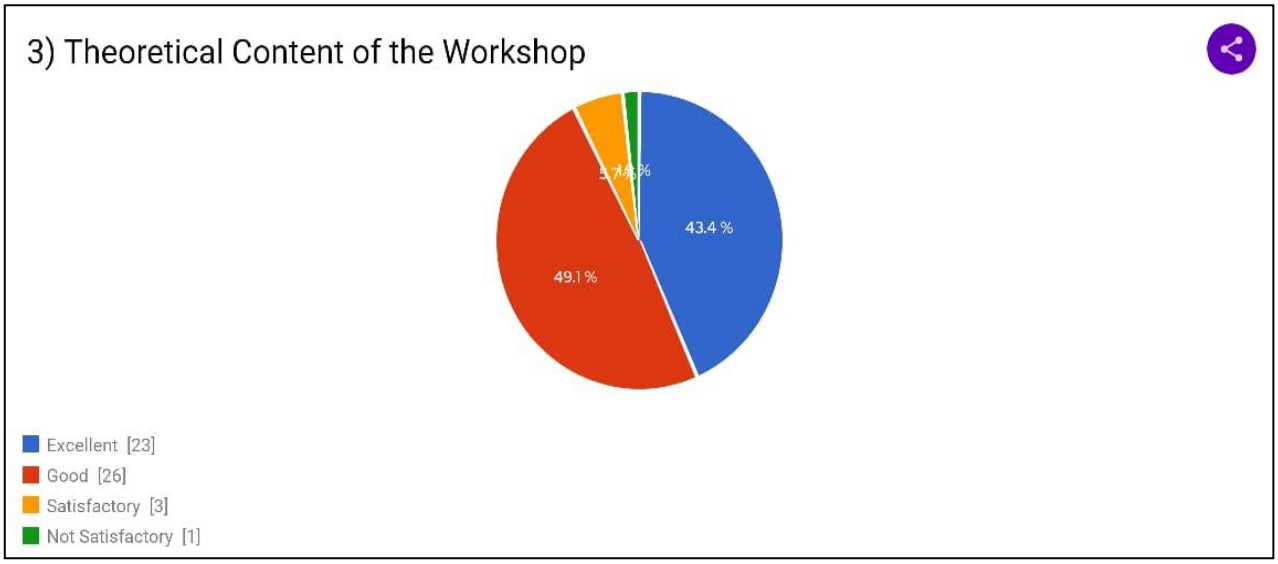
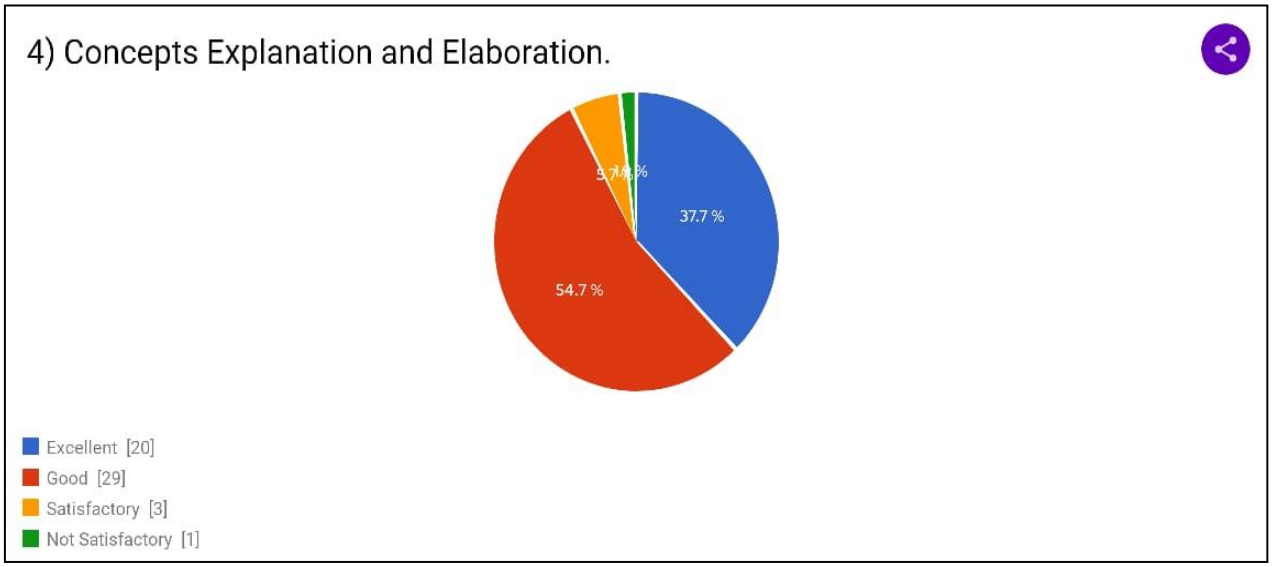
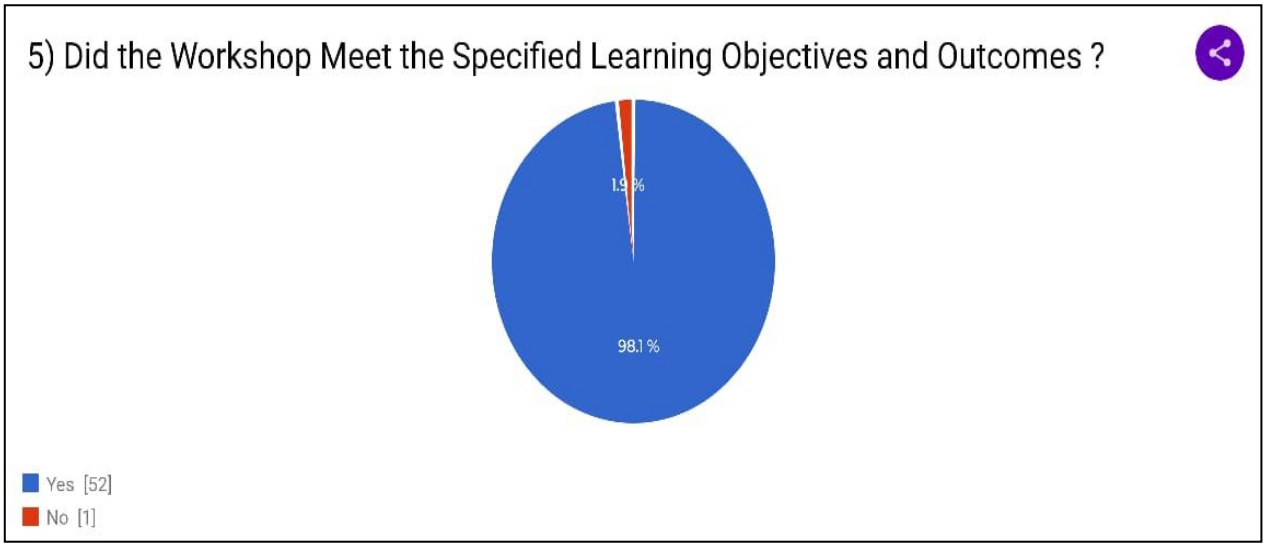
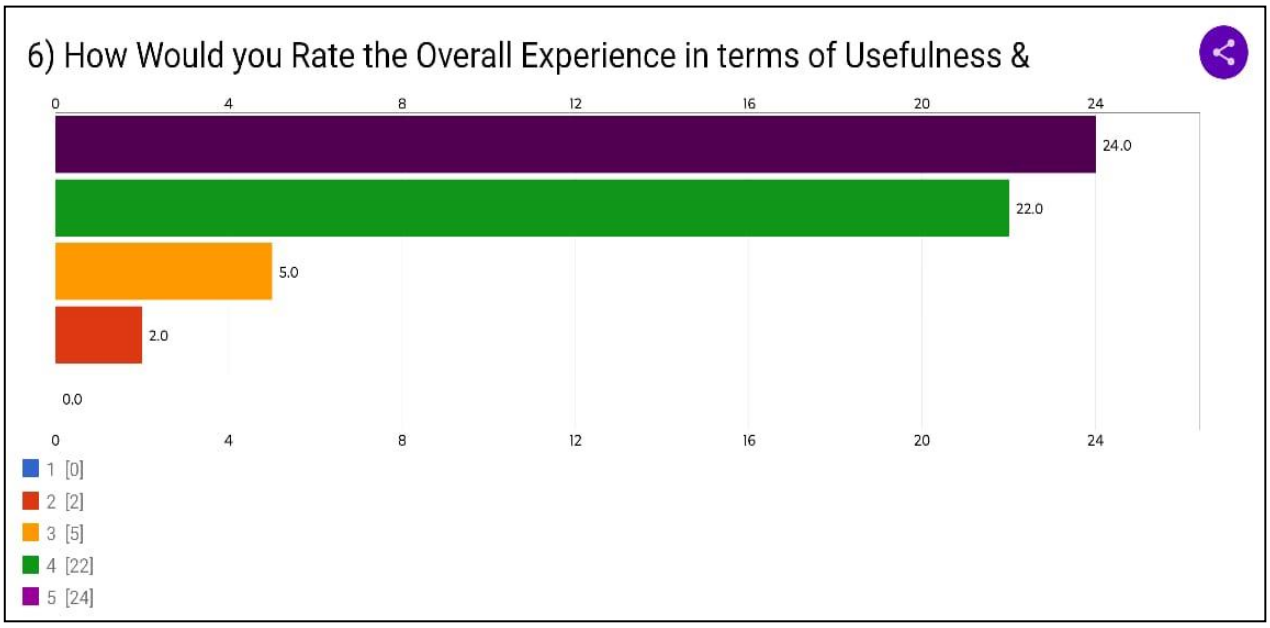
Feedback Responses from All Participants:









Suggestions:

- Integration of Python code to technology need to elaborate.
- Need more days for this workshop
- Content should be elaborated and required extension for these concepts.
- Share the Coding Notebooks for future references.

Coordinators:

Dr. K. Devi Priya

Mr. P. Jagadeeswara Rao

Mr. B. Rajendra Prasad

Convener

(Dr. S. Jayaprada)

HEAD OF THE DEPARTMENT
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