



Bhoj Reddy Engineering College for Women

(Sponsored by Sangam Laxmibai Vidyapeet, approved by AICTE and affiliated to JNTUH)
Vinaynagar, IS Sadan Crossroads, Saidabad, Hyderabad – 500 059, Telangana. www.brecw.ac.in

Department of Information Technology

File No: BRECW/IT/AY22-23-EVEN/WORKSHOP/007

Date: 24/03/2023

Report on five-day workshop on “IoT Using Raspberry Pi”.

The IT department has conducted five-day workshop on “IoT Using Raspberry Pi” for III IT A and B students during 27th February – 3rd March 2023. Total 132 students have participated in this workshop. The workshop was scheduled from 09:30 to 12:30 Hrs. The workshop is conducted by CCE NITW (National Institute of Technology Warangal). The Center for Continuing Education NIT Warangal organizes FDPs/Training programmes/Seminars/Workshops etc., in the frontier areas of Science, Engineering, Technology, Management, Humanities, Social Science and Socially relevant themes on self-financing basis. All the sessions are hands-on session.

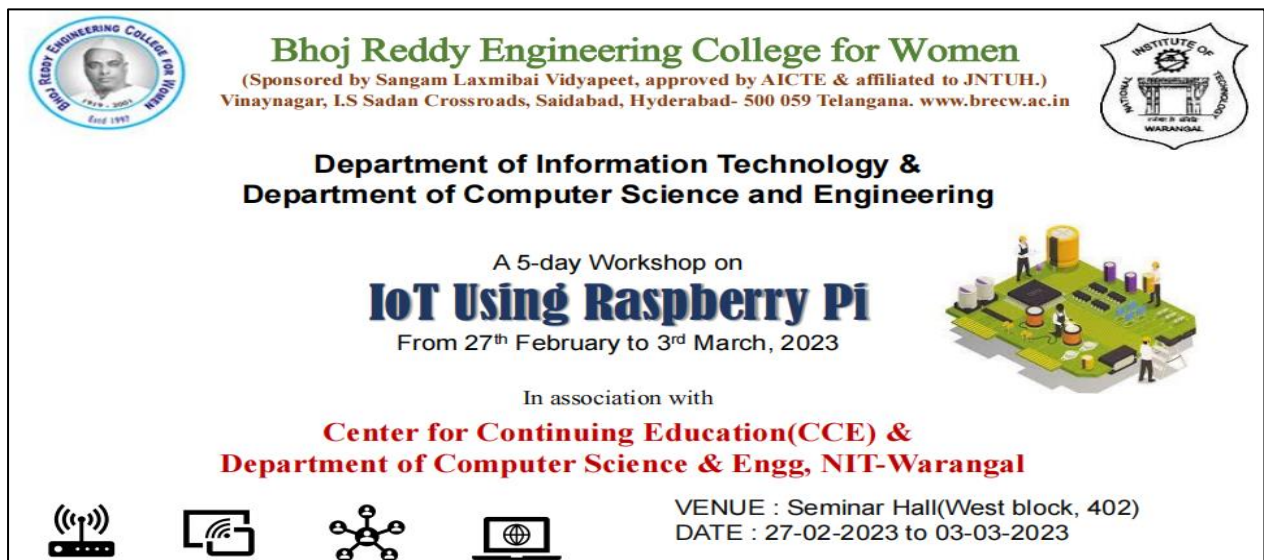


Figure 1: Workshop Banner

The objective of the Workshop:

The main objective of this workshop is to demonstrate the hardware and software portion of Raspberry Pi, which is a great platform for building low-cost, but highly capable, embedded systems. This workshop provides details about what exactly Raspberry Pi is, what hardware and software are included, how to write the first program for it and how to get it to interact with a web service on the Internet.

Focus of the Workshop:

- IoT introduction, IoT boards, use cases of IOT.
- Introduction to Raspberry Pi, Installation, Setup and Configuration pi.
- Working with LEDs, buttons, buzzers and different sensors like DHT, Ultrasonics.
- Creating weather monitor system and analyzing the collected data.

- Develop smart agriculture systems using different sensors.
- Develop a smart city system environment and use UbiClouds for data alerts.
- Develop a smart Traffic Management System and operate it using a chatbot, integrate Translato.
- Overview of Packet Tracer and Smart Home Development

Inaugural Session:

The inaugural function was started with Director of NIT Warangal, Prof. N V Ramana Rao at 10:00 AM through Google meeting call. The Principal, Dr E Madusudhana Reddy, Vice Principal, G Dayakar Reddy, and Head of IT Department, Dr C Murugamani also delivered their respective keynotes to the students in the inaugural session.

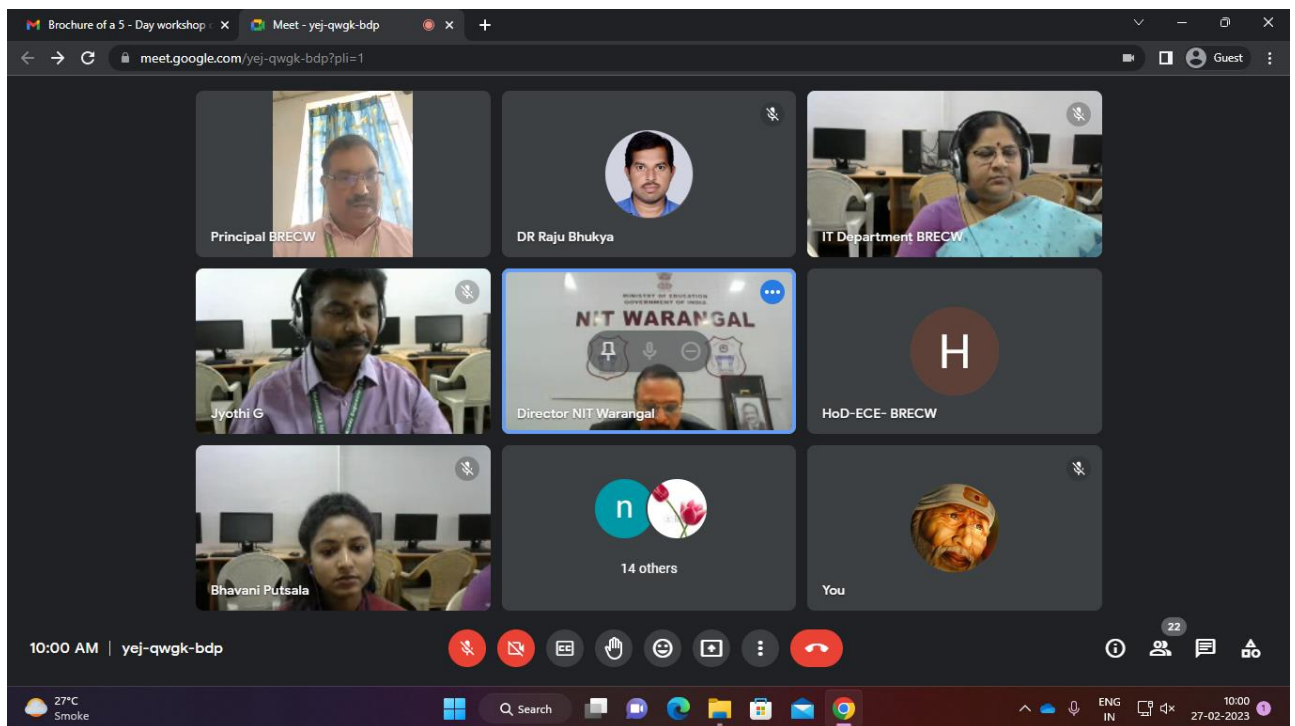


Figure 2: The Director, Prof. N.V Ramana Rao, of NIT Warangal delivered the keynote address in the inauguration session.



Figure 3: All the staff and students of III IT A and B attending the inauguration session in seminar hall-1(WB 401)



Figure 4: All the staff and students of III IT A and B attending the inauguration session in seminar hall-1(WB 401)



Figure 5: All the staff and students of III IT A and B attending the inauguration session in seminar hall-1(WB 401)



Figure 8: The Principal, Dr. E Madhusudhana Reddy, checked the status of the workshop during the session on day-1.

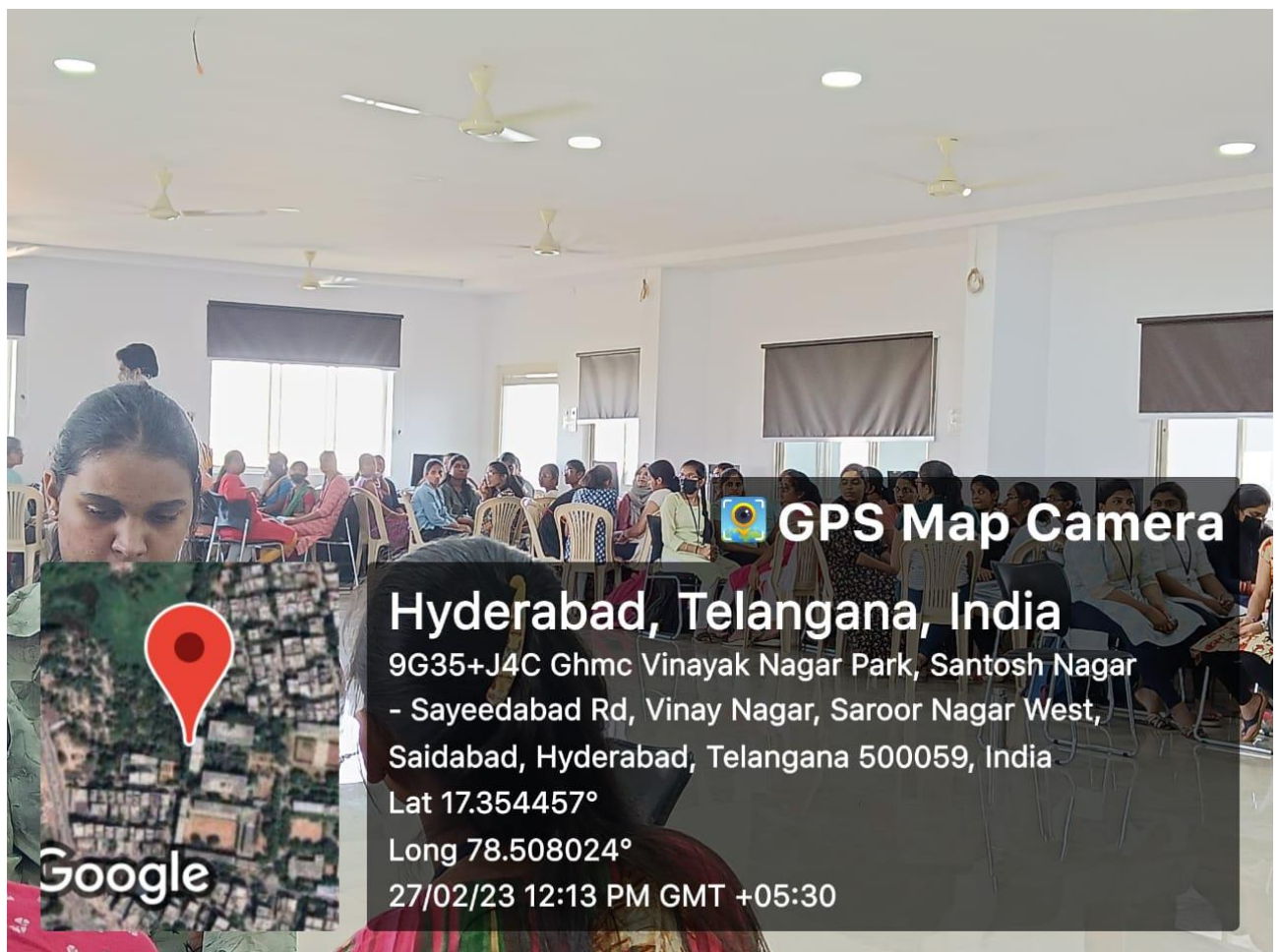


Figure 9: Batches are prepared on Day-1 for hands on sessions.



Figure 10: Mr B Prasad and our IT faculty looking after the seating arrangements and setting up the IoT devices.



Figure 11: Students involved in connecting I/O devices to Raspberry Pi.



Figure 12: Students involved in connecting I/O devices to Raspberry Pi.

DAY-2 (28 February 2023)

The second day session of the workshop was dealt by Mr.B Prasad, the resource person from NIT, Warangal.

The following topics were covered on the day-2:

LED ON and OFF:

Explained about LED, installation of LED module, nodes of LED, Connection of LED on the Bread Board to the Raspberry Pi through jumper wires based circuit diagram.

Performed various tasks on LED ON and OFF concept.

Buzzer:

Explained about Buzzer, installation of Buzzer module, Connection of Buzzer on the Bread Board to the Raspberry Pi through jumper wires based circuit diagram. Performed various tasks using Buzzer.

Button:

Explained about Button, installation of Button Module, Connection of Button on the Bread Board to the Raspberry Pi through jumper wires based circuit diagram. Performed various tasks using Button.

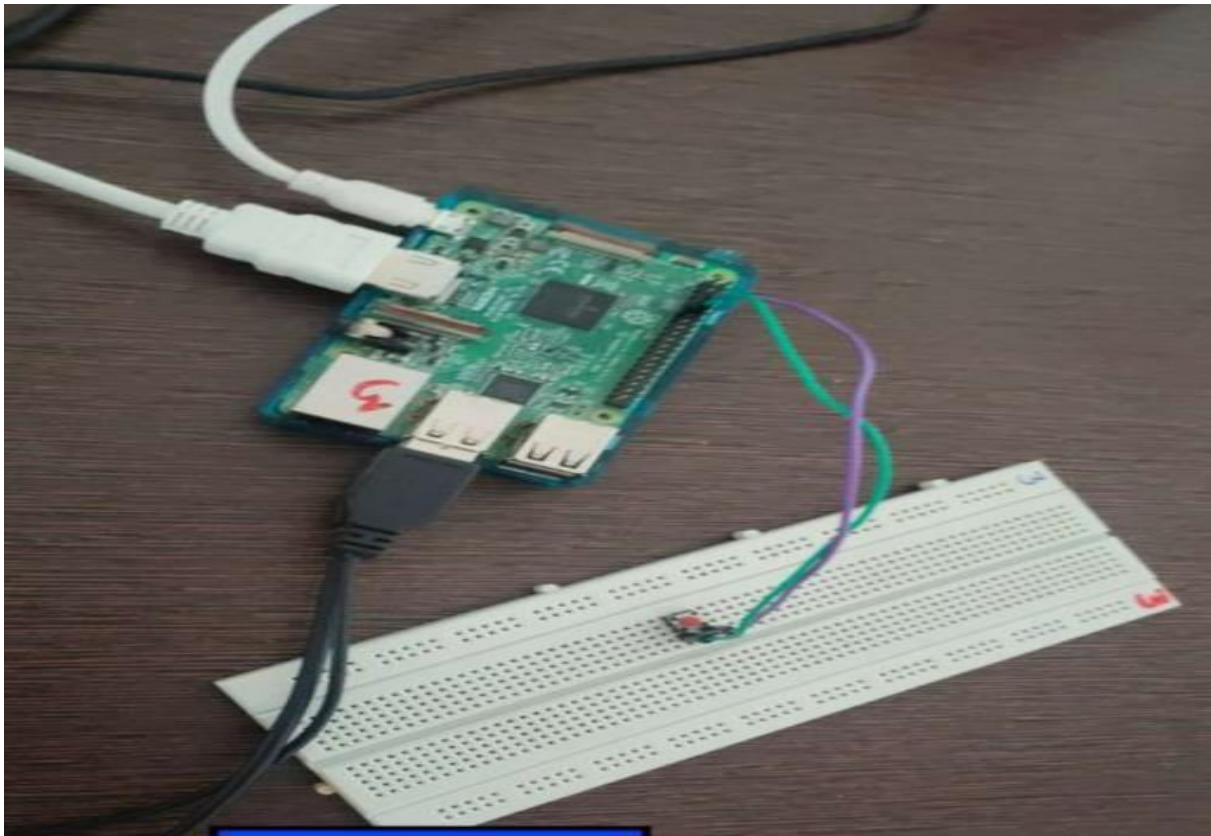


Figure 13: Connection of Buzzer

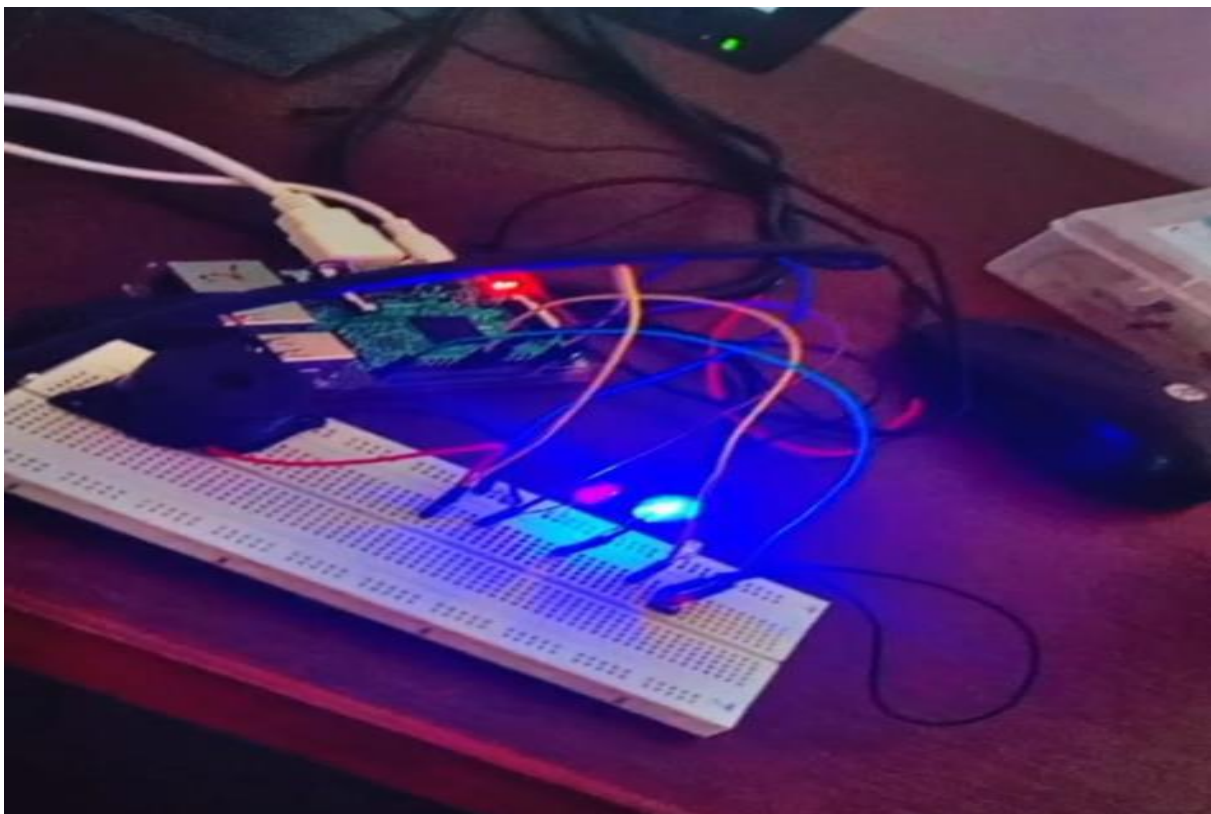


Figure 14: LED ON and OFF



Figure 15: Mr B Prasad clearing the doubts of students during the session.

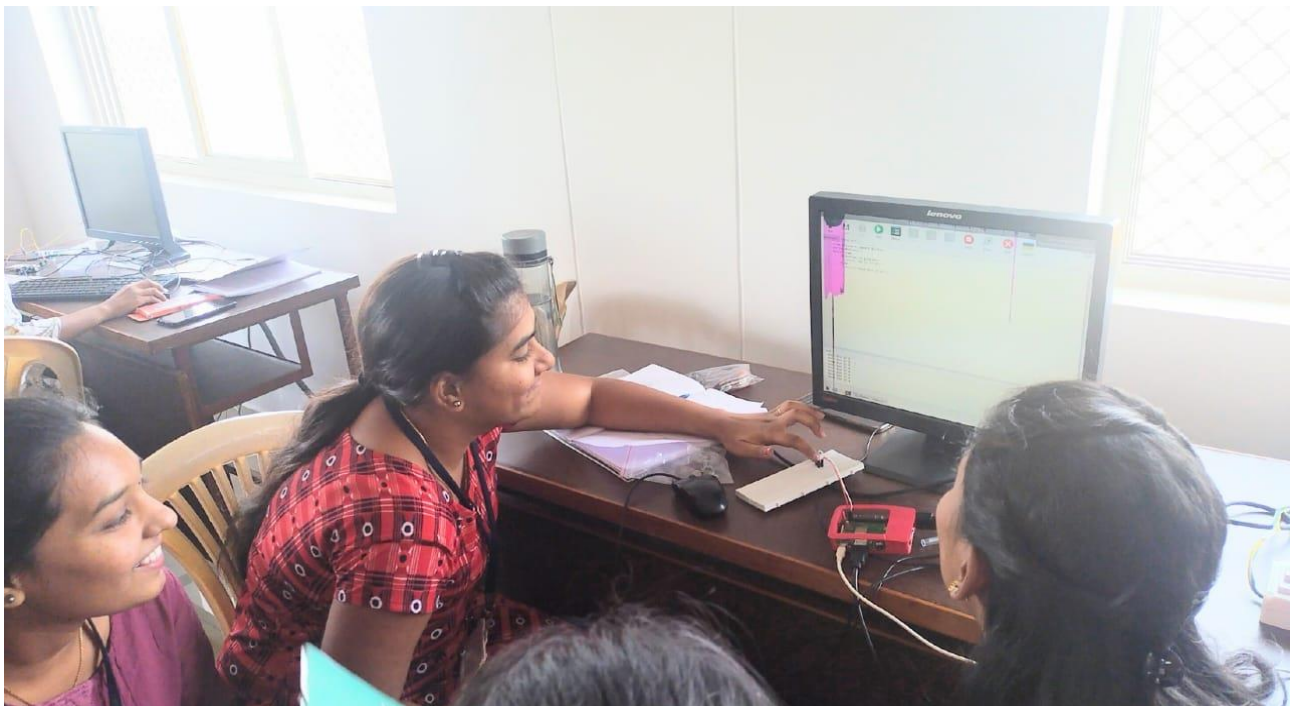


Figure 16: Student enjoying the coding for beeping the buzzer.



Figure 17: Each student in the group experimenting the connections for buzzer.

DAY-3 (01 March 2023)

The third day session of the workshop was dealt by Mr.B Prasad, the resource person from NIT, Warangal.

The following topics were covered on the day-3:

Spelled about application of LED with Raspberry Pi-Traffic Lights

Traffic Lights:

Described how to develop traffic management system and its mechanism. Construction behind the working of traffic lights using LEDs and Raspberry Pi

White light system:

Illustrated about white light application in the traffic lights to avoid accidents in daily life.

Tracing the vehicle number:

Clarified about tracing of vehicle number who does not follow the traffic rules.

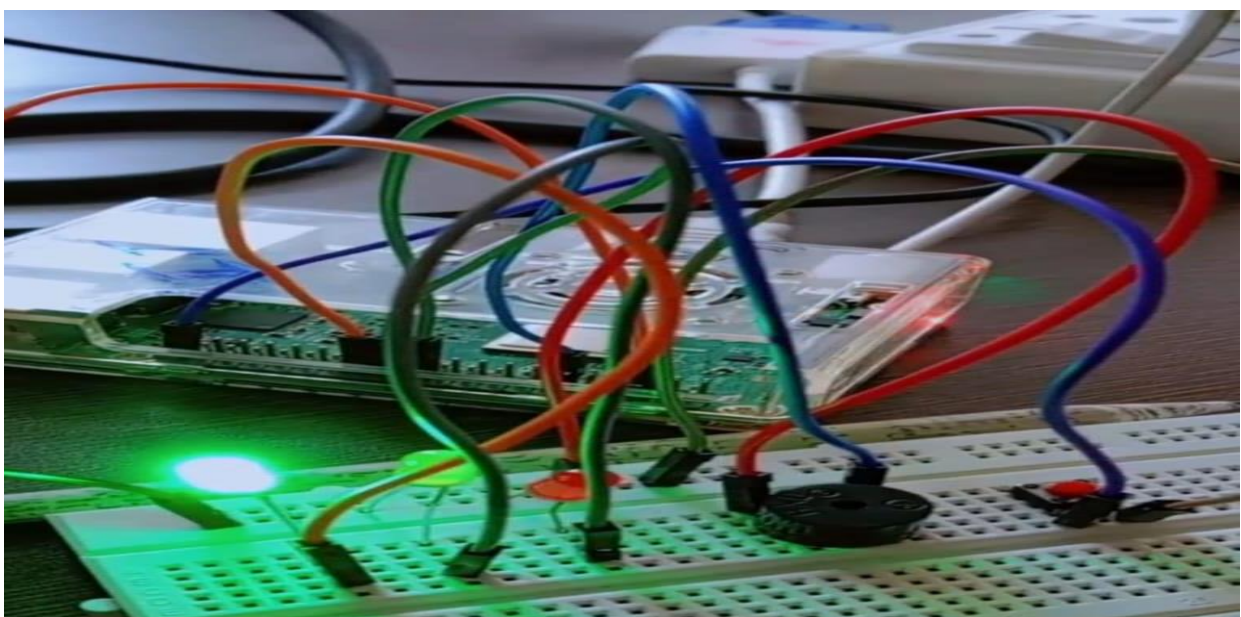


Figure 18: Traffic Lights



Figure 19: Mr B Prasad explaining the traffic lights simulation.



Figure 20: Students practicing traffics lights simulation.

DAY-4 (02 March 2023)

The fourth day session of the workshop was dealt by Mr.B Prasad and his team, the resource persons from NIT, Warangal.

The following topics were covered on the day-4:

Camera module application:

Demonstrated about camera module and its use in daily life, how to connect the camera module to the Raspberry Pi, and its access.

Capturing Photos:

Capturing photos using the camera module and application of the camera module in the Traffic Management System

Operating using chatbot:

Explained how to create a chatbot, how to communicate with the Raspberry Pi using a chatbot, and how to control the Traffic Management System (Traffic Lights) through the chatbot.



Figure 21: Camera module



Figure 22: Mr B Prasad explaining the Camera module.

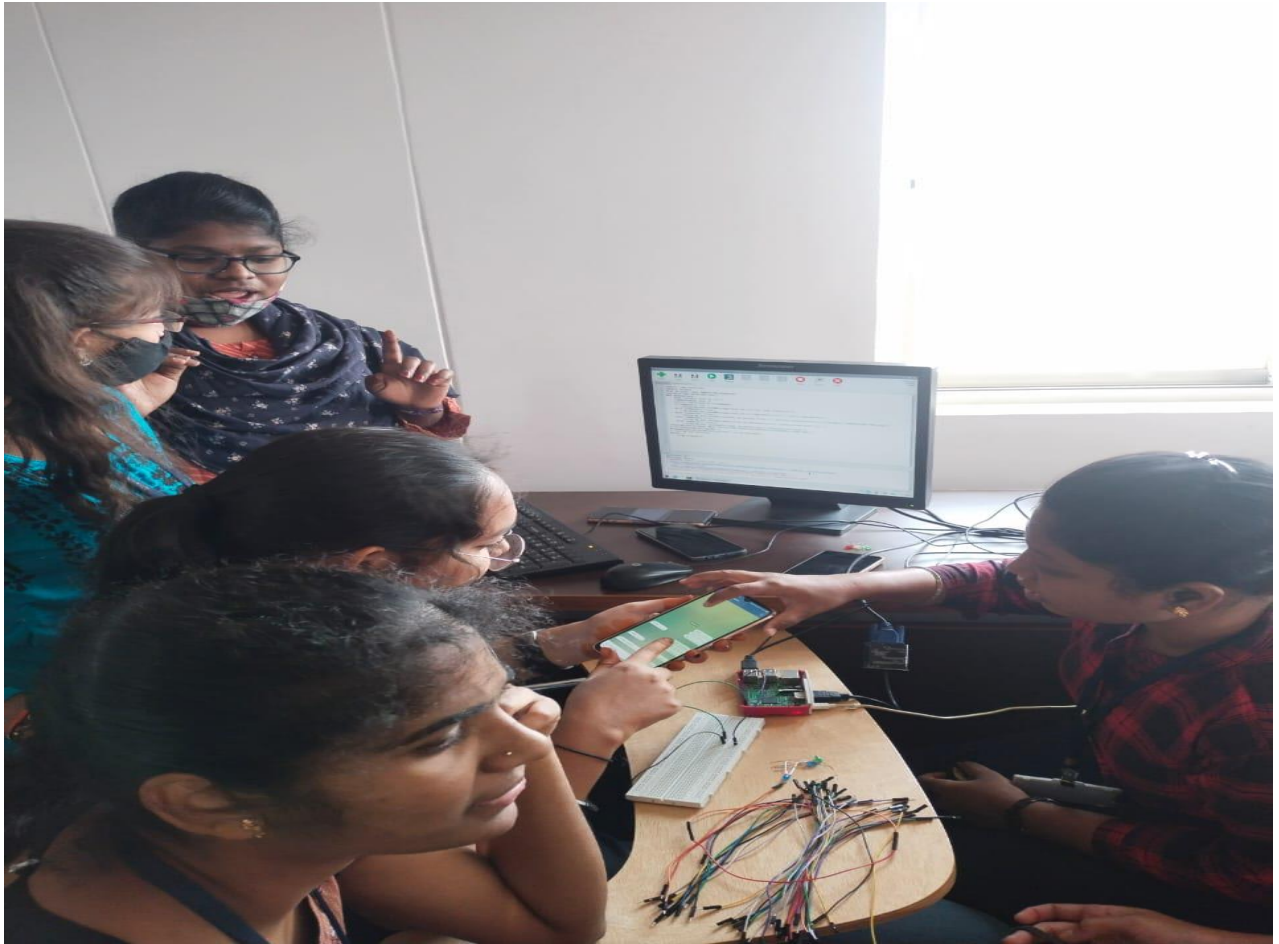


Figure 23: Students controlling the Raspberry Pi using mobile-telebot.



Figure 24: Students controlling the Raspberry Pi using mobile-telebot.

DAY-5 (03 March 2023)

The fifth-day session of the workshop was dealt with by Mr. B Prasad and his team, the resource persons from NIT, Warangal.

The following topics were covered on the day-5:

Introduction to the Cloud:

Explained the purpose of the cloud, the importance of the cloud, applications of the cloud and its usage in daily life

Creation of Private Cloud:

Described how to create a private cloud using Ubidots, and how to store the data in the cloud.

Students were formed into a group of seven per team and developed applications based on the content they learned in the workshop on each day. Each of these applications was presented to the team at the end of each day. Each group submitted an Assignment file on the last day.

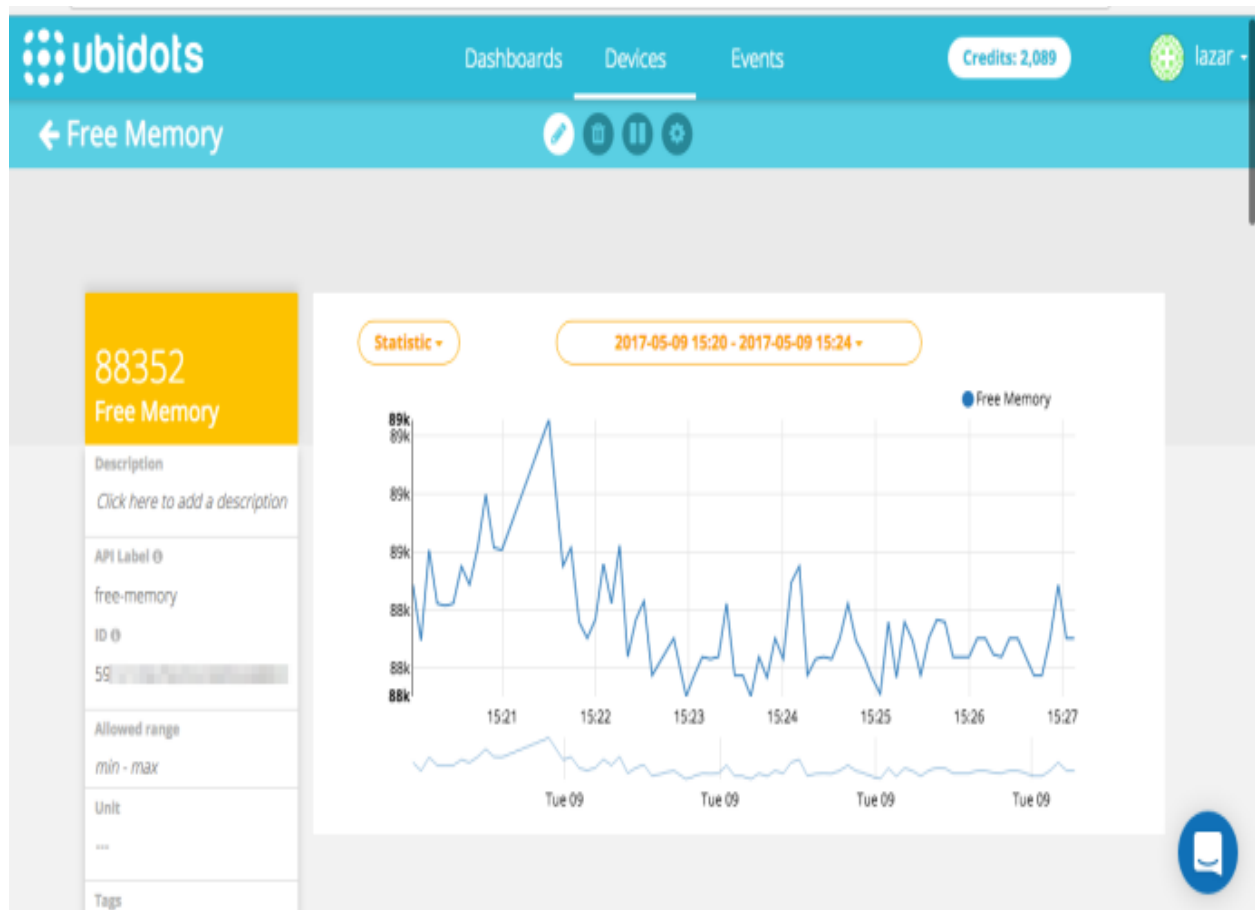


Figure 25: Creation of Private cloud



Figure 26: Mr B Prasad, the resource person from NIT Warangal, explaining the web cam application.



Figure 27: Students learning introduction of cloud into Raspberry.



Figure 28: Students exploring web camera application.

Glimpse of the valedictory function:



Figure 29: The attendees of the session are the staff of IT and CSE and all the students of III B Tech IT.



Figure 30: Left-Right: Mr. G Dayakar Reddy, Vice Principal, Ms. E Vijaya Lakshmi, Executive Officer, Dr E Madhusudhana Reddy, Principal, Dr Raju Bhukya, Incharge CCE NIT Warangal, Ms K Usha Rani, HoD CSE, Dr C Murugamani, HoD IT.



Figure 31: Y Harshitha giving a Welcome speech.



Figure 32: Dr Raju Bhukya, Incharge CCE NIT Warangal, addressing students about the importance of conducting workshops in association with NITW.

Students receiving participation certificates:



Figure 33: Receiving participation certificate.



Figure 34: Receiving participation certificate.



Figure 35: Receiving participation certificate.



Figure 36: Receiving participation certificate.



Figure 37: Sample of certificate of participation.



Figure 38: Chief Guest Dr. Raju Bhukya receiving momento from Ms. E Vijaya Lakshmi, Executive Officer, SLV.



Figure 39: Students attending valedictory function.



Figure 40: O Deekshitha delivering vote of thanks.



Figure 41: The workshop coordinator, Ms. Minhaj Begum, receiving certificate from Dr Raju Bhukya, Incharge & Coordinator of Center of Continuing Education, NIT Warangal.



Figure 42: The certificate awarded to workshop coordinator.

The valedictory function started with a welcome speech by Ms. Y Harshitha of III B Tech IT A, followed by a Keynote address by Dr. E Madhusudhana Reddy, Principal, Mr. G Dayakar Reddy, Vice Principal, Chief Guest Dr. Raju Bhukya, Incharge Center of Continuing Education & Coordinator, Dept of CSE NIT Warangal, Dr. C Murugamani, HoD IT, Ms. K Usha Rani, HoD CSE. During the valedictory function, students expressed their views and gave feedback about the workshop. Ms.O Deekshitha of III IT A proposed the vote of thanks.

All the participants were given participation certificates in the valedictory function. The Feedback from the students was collected. Overall it was a fruitful experience for all participants, coordinators, and volunteers.

Minhaj Begum
 Seminars & Workshops In-charge

Dr C Murugamani
 HoD-IT

Dr E Madhusudhana Reddy
 Principal