

Faculty Development Program On “Internet Of Things”

The Department of CSE, MVJ College of Engineering, organized a faculty development program on ‘Internet of Things’, on 20th, 21st and 22nd December 2018. The purpose of this FDP is to expose the faculty members/research scholars to emerging technologies in the area of Internet Of Things. This course provides practical foundation-level training that enables immediate and effective participation in ‘Internet of Things’ and its related projects.

The event began at 9:30 am, at Seminar Hall 4. 47 participants from various departments attended this program. The welcome address was given by Prof. Ishwari Ginimav (AP/CSE). Prof. Sivagama Sundari G (CSE) presented a bouquet to the Guest **Mr. Jaya Shakthi** and welcomed him to the FDP. Following this, the Guest addressed the gathering on Internet Of Things and its related projects.



Prof. Ishwari Ginimav is hosting the three day FDP on "Internet of Things" organized by Dept. Of CSE ,MVJCE on 20th ,21st ,22nd Dec 2018 at Seminar hall 4. Prof I ManiMozhi(HOD,Dept.of CSE), Mr.Jaya Shakthi(Senior IOT Architect, Membha Technologies), Prof. Sivagama Sundari G(Asst. Prof, Dept. of CSE)(L to R)



Prof. Sivagama Sundari G presenting bouquet to Mr.Jaya Shakthi(Senior IOT Architect, Membha Technologies in the three day FDP on "Internet of Things" organized by Dept. Of CSE ,MVJCE on 20th ,21st ,22nd Dec 2018 at Seminar hall 4. (Left to Right) Prof. Sheetal Garg(Asst. Prof, Dept. of CSE), Prof I ManiMozhi(HOD,Dept.of CSE), Mr.Jaya Shakthi(Senior IOT Architect, Membha Technologies), Prof. Sivagama Sundari(Ascc. Prof, Dept. of CSE)



Mr. Jaya Shakthi (Senior IOT Architect, Membha Technologies) addressing the participants in the three-day FDP on "Internet of Things" organized by Dept. of CSE, MVJCE on 20th, 21st, 22nd Dec 2018 at Seminar hall 4.

Here is a detailed account of the session:

Day 1

Session 1:

Introduction to Internet Of Things, IoT Quiz, Arduino board, Node MCU and Introduction to various sensors, followed by project demonstration.

This session was handled by Mr. Jaya Shakthi. He discussed the introduction of Internet of Things. It includes Arduino IDE installation, basic programming constructs for Arduino and various communication protocols used.

Session 2:

Mr. Ashwath Rao and Mr. Sangit Saha from C-DAC gave a talk on the IoT Lab Kits which can be used to do various experiments like RF experiments, Embedded Programming, experiments on interfacing with UbiSense, WSN applications, IOT applications.



Mr. Ashwath Rao (CDAC Bangalore) addressing the participants in three day FDP on "Internet of Things" organized by Dept. Of CSE, MVJCE on 20th, 21st, 22nd Dec 2018 at Seminar hall 4. (L to R) Mr. Ashwath Rao (CDAC Bangalore) Mr. Sangit Saha (CDAC Bangalore)

IoT System developed by the C-DAC, supports lot of features which enable researchers and students to explore different aspects, and develop different applications in the IOT field. The most popular users for realization of IoT are Zigbee and 6LoWPAN (IEEE 802.15.4), Bluetooth and Wi-Fi. CDAC's IoT Lab Kit comprising of Ubimote, BLE motes, Wi-Fi motes along with Ubisense and WINGZ form a perfect platform for studying and exploring these technologies, with the help of possible list of experiments provided.

Sessions 3 and 4:

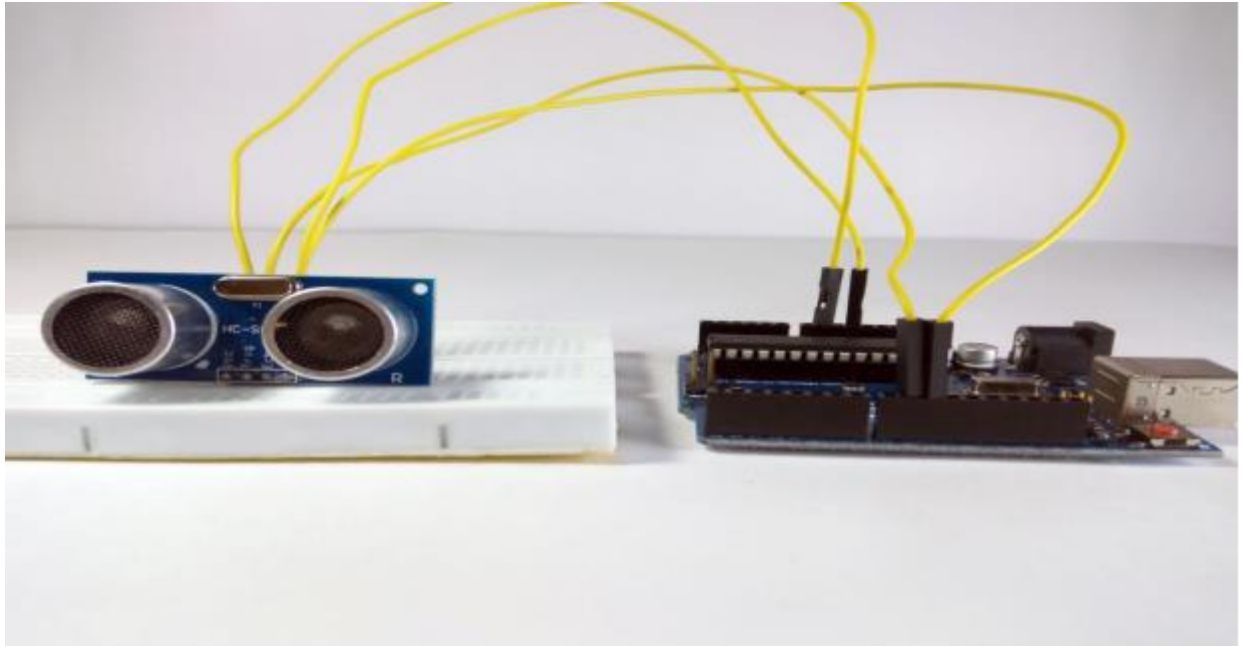
Various experiments were conducted.

Experiment 1: LED ON and OFF, using Arduino board

Experiment 2: Relay module interfacing with the Arduino

A relay is basically a switch which is operated electrically by electromagnet. A relay can be used to control high voltage electronic devices such as motors as well as low voltage electronic devices such as a light bulb or a fan. Relays work on the principle of electromagnetism. When electricity is provided to the relay coil, it acts like a magnet and changes the state of the switch. The part which powers the relay module is completely isolated from the part which turns ON or OFF. This is why we can control a 220V appliance by simply using the 5V Arduino.

Experiment 3: Interfacing Ultrasonic Sensor with Arduino



Project Demonstration given by Mr. Jaya Shakthi (Senior IOT Architect, Membha Technologies) in three day FDP on "Internet of Things" organized by Dept. Of CSE, MVJCE on 20th, 21st, 22nd Dec 2018 at Seminar hall 4.

An Ultrasonic Sensor is a device that measures distance to an object using sound waves. It works by sending out a sound wave at ultrasonic frequency, and waits for it to bounce back from the object. Then, the time delay between transmission of sound and receiving of the sound is used to calculate the distance.

Experiment 4: Servo Motor Control with an Arduino

Servo motors are used to control the position of objects, rotate objects, move legs, arms or hands of robots, move sensors etc., with high precision. Servo motors are small in size, and because they have built-in circuitry to control their movement, they can be connected directly to an Arduino.

Day 2

Session 1 and 2: Mini projects were done by each of the teams.

Team1:

Team Name: Arduino

Team Members: Mrs. Thanu Kurian, Ms. Jeanmary Jose, Sruthi Damodaran

Project Name: Smart Dust Bin

Project Description:

The Project was done using Arduino, where the bin opens when we are near the bin and closes when we are far. This was done by using an ultrasonic sensor, which is connected to a motor. The lid of the bin is controlled through the motor (open and close). There are two LEDs – the blue LED glows when the bin opens, and the green glows when the bin closes.



Team1 is demonstrating their project "Smart dustbin" that will open and close by sensing the object in the three day FDP on "Internet of Things" organized by Dept. Of CSE ,MVJCE on 20th ,21st ,22nd Dec 2018 at Seminar hall 4 (R to L) Mrs Thanu Kurian,Ms Jeanmary Jose,MsSruthi

Team 2:

Team Name: Neon@

Team Members: Mrs. Kavyashree, Mrs. Preethi, Mrs. Vijitha, Mrs. Mamtha

Project Name: Checking the soil moisture level using Arduino

Project Description:

This is a simple arduino project for a soil moisture sensor that will light up a LED at a certain moisture level. It uses Arduino Duemilanove microcontroller board. Two wires placed in the soil pot form a variable resistor, whose resistance varies depending on soil moisture. This variable resistor is connected in a voltage divider configuration, and Arduino collects a voltage proportional to resistance between the 2 wires.

Insert the 2 probes (wires, pcb) in the dry soil and measure the resistance value and then pour water and measure it again.

Use a mid value for the resistor (eg: 50k Ω for 100k Ω in dry soil and 10k Ω in wet).



Team2 demonstrating their project which can detect the soil moisture in the three day FDP on "Internet of Things" organized by Dept. Of CSE ,MVJCE on 20th ,21st ,22nd Dec 2018 at Seminar hall 4 (Vijitha U G and Team)

Team 3:

Team Name: Raspberry

Team Members: Mrs. Priya K, Mrs. Anaswara, Mrs. Shriuthi

Project Name: Using NFC card with Arduino

Project Description:

All the connections were set up, as per the requirement. RFID card and RFID cloth Tag were used. When RFID card was taken near the RFID detector the green LED glowed. When RFID cloth Tag was used the white LED glowed.



Team3 demonstrating the arduino board project using NFC card in the three day FDP on "Internet of Things" organized by Dept. Of CSE ,MVJCE on 20th ,21st ,22nd Dec 2018 at Seminar hall 4 (L toR)Ms.Anaswara, MsPriya, Ms.Shruthi

Team 4:

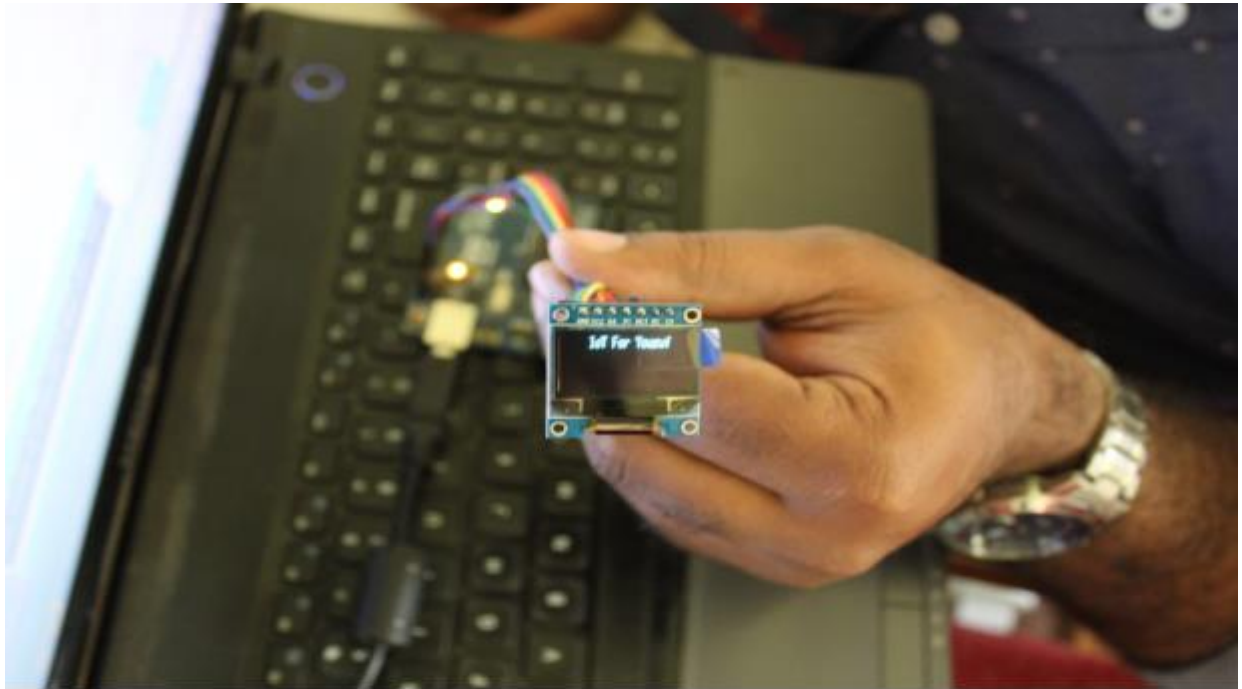
Team Name: AS3

Team Members: Mrs.Yousuf, Mr. Karthik, Dr. Selvan

Project Name: Displaying Welcome Message on OLED with Arduino

Project Description:

Components required are OLED Arduino male-female cables. Arduino was connected with OLED, two Adafruit Libraries were called, the values to be displayed were passed and the preferences were set using display function.



Team4 lead Mr.Yousuf showing the message displayed on OLED using Arduino in the three day FDP on "Internet of Things" organized by Dept. Of CSE ,MVJCE on 20th ,21st ,22nd Dec 2018 at Seminar hall 4.

Team 5:

Team Name: Apple

Team Members: Mr. Vinay, Mrs. Antra, Easach L S

Project Name: Node MCU Blinking LED

Project Description:

Node MCU is the replacement of Arduino. It has inbuilt wi-fi module and it is handy to use, so it is more popular. The LED negative side was connected to ground of Node MCU and positive side to D7. The Node MCU was connected through USB cable to laptop .When code will be uploaded LED will start blinking.

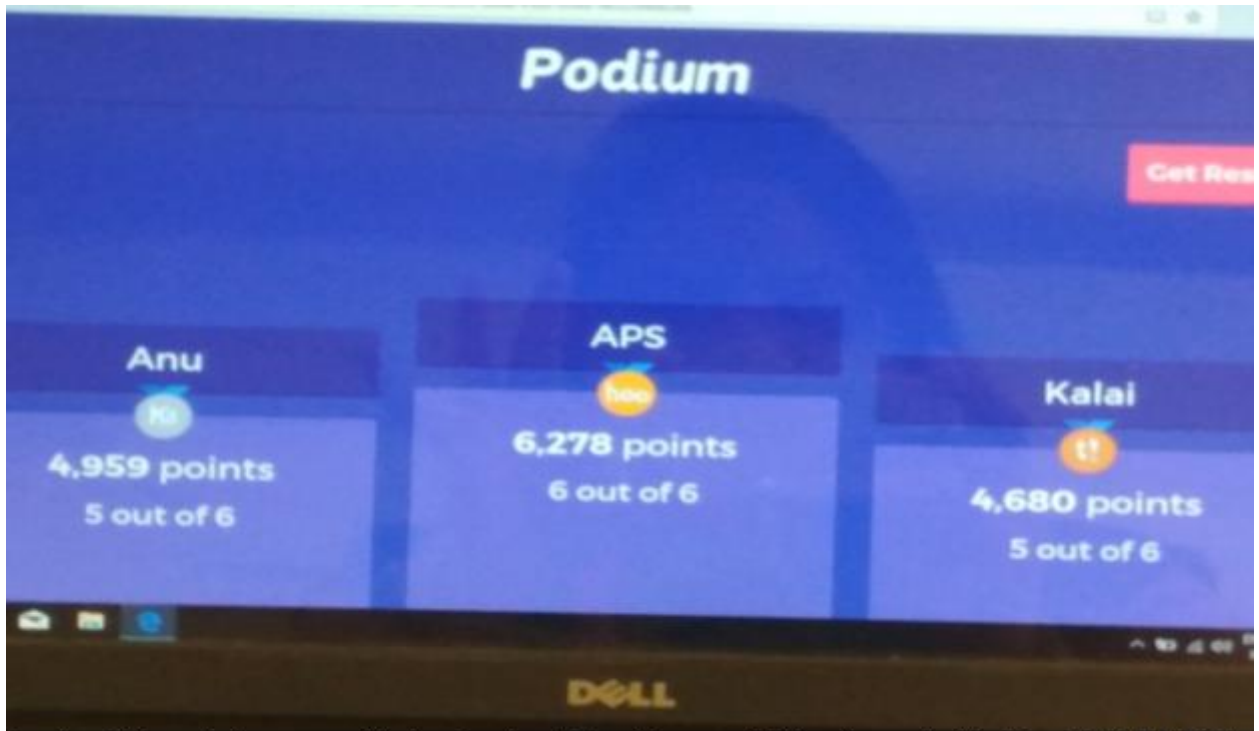


Team5 lead Mr.Vinay is demonstrating the Node MCU project for LED blinking in the three day FDP on "Internet of Things" organized by Dept. Of CSE ,MVJCE on 20th ,21st ,22nd Dec 2018 at Seminar hall 4.

Session 3:

This session involved identifying different sensors and explaining the use of sensors like Touch Sensors, Sound Sensors, Gyrosensors (tracks the position), Light Sensors, Moisture Sensors, Water Sensors, Dust Sensors.

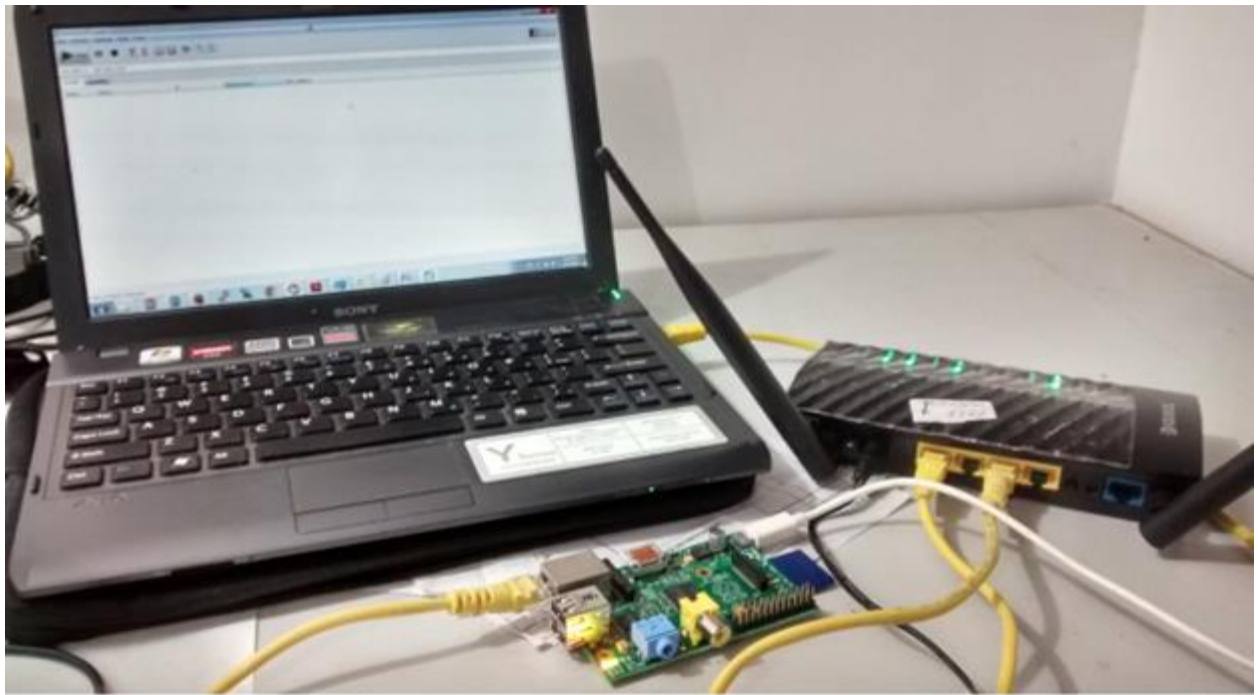
A Quiz was conducted through Kahoot.



Result of Kahoot Quiz announced in the three day FDP on "Internet of Things" organized by Dept. Of CSE ,MVJCE on 20th ,21st ,22nd Dec 2018 at Seminar hall 4

Session 4:

An introduction to Raspberry Pi computer components was given. Raspberry connectivity was demonstrated with remote devices.



Demonstrating how to Access Raspberry Pi 3 with laptop in the three day FDP on "Internet of Things" organized by Dept. Of CSE ,MVJCE on 20th ,21st ,22nd Dec 2018 at Seminar hall 4

Project Demonstration on:

Remote Log Into Your Raspberry Pi's Full Operating System Using VNC Connect

VNC has long been the best way to access any computer on the same network, remotely. Recently, VNC Connect came out to make it easy to access your Raspberry Pi from anywhere, using a cloud connection. Once it is set up, you can access your Raspberry Pi's graphic interface from any other computer or smart phone, using the VNC Viewer app.

A Game was played, in order to clarify the concepts of sensor, cloud and actuator.

Day 3

Session1:

Experiment performed by the participants in:

Control Devices Using Phone and Nodemcu

An Application running on Android Phone will get the temperature and humidity values from the Nodemcu, and it will also control the 4 Relays which are connected to the Nodemcu, all over the WiFi channel. So using this setup, you can control your appliances using Android Phone over WiFi.

The Block Diagram is as follows:

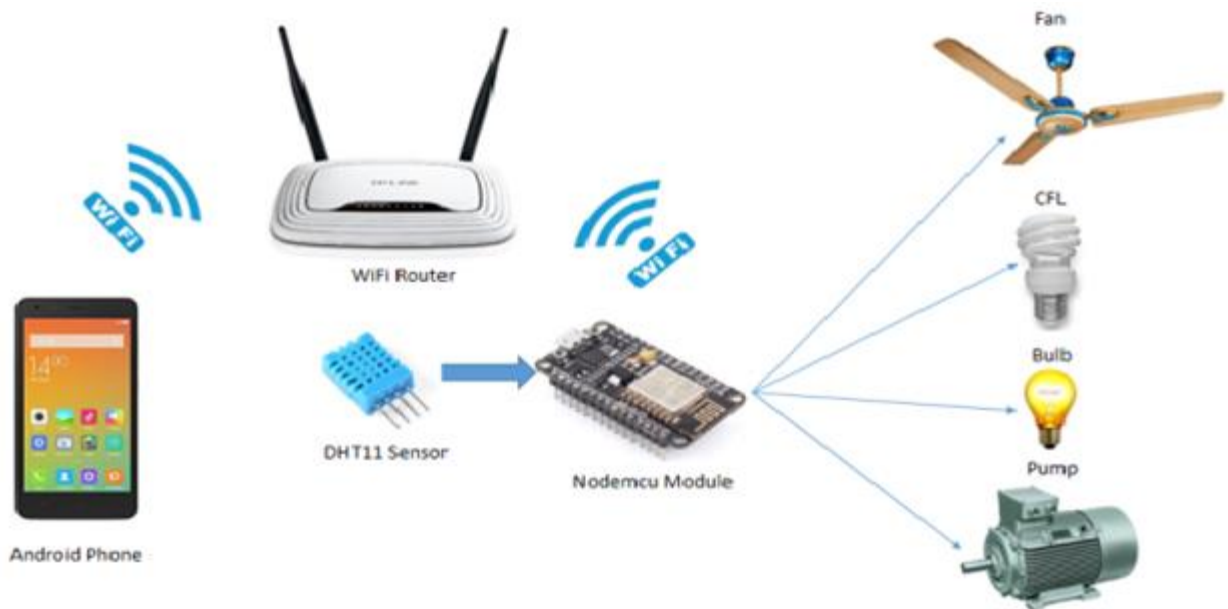


Diagram to show the working of the project in which NodeMCU is used to control the various appliances ,which can be controlled by the phone directly in the three day FDP on "Internet of Things" organized by Dept. Of CSE ,MVJCE on 20th ,21st ,22nd Dec 2018 at Seminar hall 4

Discussion of various MQTT Protocols and understanding the difference between Arduino and Raspberry Pi usage in the different projects was held.

Session2:

Quiz was conducted and the names of the winners were announced.



Winners of the quiz conducted in the three day FDP on "Internet of Things" organized by Dept. Of CSE ,MVJCE on 20th ,21st ,22nd Dec 2018 at Seminar hall 4 (L to R) Ms Kalaimathi, Ms Preethi ,Ms Swathika

Valedictory Function

Mrs. Sheetal Garg (Asst. Prof. of CSE Dept.) gave the vote of thanks to Mr. Jaya Shakthi. Dr. Shyam P Joy honored the guest.



Dr. Shyam P Joy honoring the guest Mr. Jaya Shakthi in the three day FDP on "Internet of Things" organized by Dept. Of CSE ,MVJCE on 20th ,21st ,22nd Dec 2018 at Seminar hall 4



Mr. Jaya Shakthi along with the participants in the three day FDP on "Internet of Things" organized by Dept. Of CSE ,MVJCE on 20th ,21st ,22nd Dec 2018 at Seminar hall 4

Outcome of the event

As a result of this FDP, the participants were able to learn about the installation of Arduino IDE, basic programming for Arduino, various communication protocols and the usage of different types of sensors.

They conducted various experiments like LED ON and OFF using Arduino Board, Relay Module interfacing with Arduino, Interfacing Ultrasonic Sensor with Arduino, Servo Motor control with Arduino, Messaging on OLED with Arduino, Coding with Node MCU, Controlling Devices using phone and NodeMCU.

The participants implemented the mini projects on Smart Dust Bin, Soil Moisture Checking, NFC card reading with Arduino etc.

Last but not the least, they learnt how to work on Raspberry pi and to connect and control remote devices through Raspberry pi 3.