

Internet Of Things(IOT)

1st Session

- Objective of the course
- Introduction to IOT
- What is the use of IOT
- How a smart phone communicate with the Hardware
- About smart phone development environments
- About Raspberrypi and Arduino Boards
- Arduino IDE
- About Embedded system
- About Linux OS
- How Linux is related with Single Board Computer(SBC) like Raspberrypi
- Difference between arduino and SBC

2nd Session

- Introduction to Linux OS
- Basic commands in Linux
- Login into Raspberrypi using ssh or putty
- Users and permissions in Linux
- Introduction to vi editor
- Introduction to scripting and scripting languages
- About bash shell, bash script, startup script and converting an SBC to Embedded system.
- Programming languages supported by Raspberrypi

Lab Session

- Login into raspberrypi from host computer
- edit a file using vi editor
- change the file permissions
- write a script to list file in the present directory, make a new directory, change to created directory, make files in the directory and list the files in current directory .

- print a message when you login and logout from the shell.

3rd Session

- Introduction to python language
- python interpreter
- executing python commands in interpreter
- writing python script
- searching and installing new python libraries with pip command
- Introduction to GPIO's on SBC
- Invoking GPIO's using python

Lab session

- write a python script to print a string
- print string for 10 times and print string for 10 times with one second delay
- glow an led using GPIO's on raspberry pi for 5 seconds and glow and off the led with 5 seconds delay continuously

4th session

- What are sensors
- How can we read sensor information using GPIO's and python script
- Distance sensor and Human detection sensor using python script using AdaFruit libraries
- Temperature and humidity sensor using libraries

Lab session

- read humidity ,temperature when a human being is detected and print them
- read the distance continuously and print the obstacle distance

5th session

- About Lan,wifi and hot spot.
- About IP address and subnet mask
- About port numbers
- About dynamic and static IP in local network
- About socket programming in python
- Server and client scripts in python

Lab session

- change the ip address of your wan1 to static ip address
- write a python script to communicate between raspberrypi and PC
- write a python script to communicate between two raspberrypi boards
- control the led from pc using python script running on PC

6th session

- Installing http video service on raspberrypi
- accessing the video on raspberrypi from remote PC using IP address and port number
- Introduction to android application,files in android studio
- creating button view in android
- designing a browser in android

Lab session

- write an android application using android studio to access a web page from Internet

7th session

- Introduction to socket programming in android
- Communication between android and raspberrypi
- glowing an LED when button pressed in android phone

Lab session

- write a program in android and raspberrypi python to glow LED and off the LED using button event

8th session

- Mjpeg view on android
- control the led in raspberrypi board by seeing the cam from remote place
- read the sensores information and display it on android phone

Lab session

- By viewing the cam in android remotely control LED and read the sensor information to display in phone

9th session

Project

