

INTERNET OF THINGS LABORATORY**(Professional Elective – III)****Course Code: KG23ACS326**

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B.Tech. III Year II Sem.

Course Objectives

- To introduce the raspberry PI platform, that is widely used in IoT applications
- To introduce the implementation of distance sensor on IoT devices

Course Outcomes

1. Ability to introduce the concept of M2M (machine to machine) with necessary protocols and get awareness in implementation of distance sensor
2. Get the skill to program using python scripting language which is used in many IoT devices

List of Experiments

1. Using Raspberry pi
 - a. Calculate the distance using a distance sensor.
 - b. Interface an LED and switch with Raspberry pi.
 - c. Interface an LDR with Raspberry Pi.
2. Using Arduino
 - a. Calculate the distance using a distance sensor.
 - b. Interface an LED and switch with Aurdino.
 - c. Interface an LDR with Aurdino
 - d. Calculate temperature using a temperature sensor.
3. Using Node MCU
 - a. Calculate the distance using a distance sensor.
 - b. Interface an LED and switch with Raspberry pi.
 - c. Interface an LDR with Node MCU
 - d. Calculate temperature using a temperature sensor.

4. Installing OS on Raspberry Pi
 - a) Installation using PiImager
 - b) Installation using image file
 - Downloading an Image
 - Writing the image to an SD card
 - using Linux
 - using Windows
 - Booting up Follow the instructions given in the URL <https://www.raspberrypi.com/documentation/computers/getting-started.html>
5. Accessing GPIO pins using Python
 - a) Installing GPIO Zero
library. update your
repositories list:
install the package for Python 3:
 - b) Blinking an LED connected to one of the GPIO pin
 - c) Adjusting the brightness of an LED Adjust the brightness of an LED (0 to 100, where 100 means maximum brightness) using the in-built PWM wavelength.
6. Create a DJANGO project and an app.
7. Create a DJANGO view for weather station REST API.
8. Create DJANGO template.
9. Configure MYSQL with DJANGO framework.

TEXT BOOKS:

1. Internet of Things - A Hands-on Approach, Arshdeep Bahga and Vijay Madisetti, Universities Press, 2015, ISBN: 9788173719547.
2. Getting Started with Raspberry Pi, Matt Richardson & Shawn Wallace, O'Reilly (SPD), 2014, ISBN: 9789350239759.

REFERENCE BOOKS:

1. Bernd Scholz-Reiter, Florian Michahelles, "Architecting the Internet of Things", ISBN 978-3- 642-19156-5 e-ISBN 978-3-642-19157-2, Springer, 2016
2. N. Ida, Sensors, Actuators and Their Interfaces, Scitech Publishers, 2014.