Indira College of Engineering & Management, Pune

Department of Artificial Intelligence and Data Science

Laboratory Manual

Academic Year :2023-24
(Semester –IV)

Course: Internet of Things Laboratory

Course Code: 217531

Course Coordinator: Prof. Pallavi Chavan

List of Laboratory Experiments

Sr. No.	Group A
1.	Study of Raspberry-Pi/ Beagle board/ Arduino and other microcontroller (History & Elevation)
2.	Study of different operating systems for Raspberry-Pi /Beagle board/Arduino. Understanding the process of OS installation
3.	Study of different GATES (AND, OR, XOR), Sensors and basic binary operations.
4	Study of Connectivity and configuration of Raspberry-Pi /Beagle board/Arduino circuit with basic peripherals like LEDS. Understanding GPIO and its use in the program.
	Group B
5	Write a program using Arduino to control LED (One or more ON/OFF). Or Blinking
6	Create a program that illuminates the green LED if the counter is less than 100, illuminates the yellow LED if the counter is between 101 and 200 and illuminates the red LED if the counter is greater than 200
7	Create a program so that when the user enters 'b' the green light blinks, 'g' the green light is illuminated 'y' the yellow light is illuminated and 'r' the red light is illuminated
8	Write a program that asks the user for a number and outputs the number squared that is entered
9	Write a program to control the color of the LED by turning 3 different potentiometers. One will be read for the value of Red, one for the value of Green, and one for the value of Blue
10	Write a program read the temperature sensor and send the values to the serial monitor on the computer
11	Write a program so it displays the temperature in Fahrenheit as well as the maximum and minimum temperatures it has seen
12	Write a program to show the temperature and shows a graph of the recent measurements
13	Write a program using piezo element and use it to play a tune after someone knocks
14	Understanding the connectivity of Raspberry-Pi /Beagle board circuit / Arduino with IR sensor.Write an application to detect obstacle and notify user using LEDs

Group C (Any 1)	
15	Study of ThingSpeak – an API and Web Service for the Internet of Things (Mini Project: Samecan be done parallel with PBL)
16	Write an application to control the operation of hardware simulated traffic signals. (Mini Project:Same can be done parallel with PBL)
17	Develop a Real time application like smart home with following requirements: When the user enters into the house the required appliances like fan, light should be switched ON. Appliances shouldalso get controlled remotely by a suitable web interface. The objective of this application is that students should construct complete Smart applications in groups. (Mini Project: Same can be done parallel with PBL)
18	Write an application for stopwatch or countdown timer. (Mini Project: Same can be done parallelwith PBL)

@The CO-PO mapping table

PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO11	PO12
CO1	2	1	3	--	--	--	--	--	--	--	--	--
CO2	--	2	3	--	--	--	--	--	--	--	--	--
CO3	--	--	3	2	--	--	--	--	--	--	--	3