CHARUSAT

CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY
FACULTY OF TECHNOLOGY AND ENGINEERING
Devang Patel Institute of Advance Technology and Research
Department of Computer Science and Engineering

Subject Name: Internet of Things
Subject Code: CS449

Semester: VII
Academic year: 2022-23

Practical List

Sr. No.	Aim of the Practical	Hrs.	CO
	Part-1		
1.	Installation and configuration of Instant Contiki OS with Cooja simulator.	2	2, 3
2.	Introduction and implementation of different types of motes and deploy them using IoT architecture in Cooja.	2	2
3.	Simulate Hello World program using Cooja.	2	2
4.	Create a scenario by adding some motes. Do the simulation for the same. Also observe the result for said scenario. Scenario: When one mote sends the signal then led should turn green while one receives then it should show red color. Simulate BGP and RPL protocol in Cooja.	2	1
5.	Simulate client server architecture using UDP on contiki-os	2	4
6.	Study and Introduction of Tiny OS in IOT development.	2	1,3
7.	Demonstrate message publish & subscribe mechanism of MQTT protocol using node red.	2	3
8.	Proteus Simulation for Home automation and smart city.	2	2,3
9.	Implement mini project and connect with IBM Bluemix & Thingspeak for data collection on cloud and plot the graph of it. Plotting data on thingspeak.com. Take analog input from ESP and pass that data to api.thingspeak.com and prepare a 2 online graph.	2	5
10.	AICTE Project Demo and hardware study of Waspmote, Libellium Gateway, Zigbee module and various water sensors. (PH Sensor, Dissolved Oxygen sensor, Ion Sensor (Cl, Ca))	2	1, 3
	Part-2		
1.	**Project** while utilizing IoT concept should be built by the student and it should be submitted in the end of semester. Students can do the project in the group or individual it depends upon the capacity of project and project should be approved by the lab teacher before start to work on it.	8	2,3,4,5,6

List of Open-Source Software/learning website:

- **https://github.com/connectIOT/iottoolkit**
- **https://www.arduino.cc/**
- **http://www.zettajs.org/**
- Contiki (Open source IoT operating system)
- Arduino (open source IoT project)
- IoT Toolkit (smart object API gateway service reference implementation)