Teachers Assessment Activity (TA-1)

Project Abstract

(Introduction to IoT ECT 359-4)

6th Semester B.E. Session-2021-22

Title: Weather Station Using Raspberry pi

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Weather station using Raspberry pi

1. Introduction:

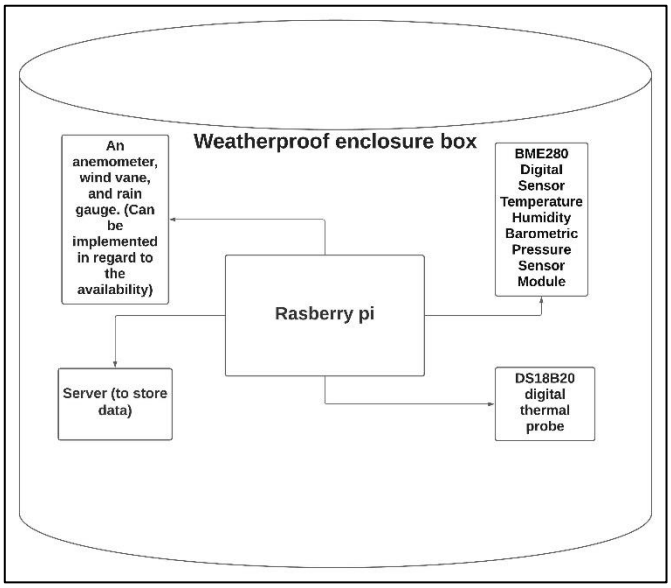
A weather station for collecting local Weather and environmental data. First of all, we will develop and build a prototype weather station using breadboard and jumper wires. Once we have got everything running and tested, we will put efforts to turn this prototype into a more robust build so that we can deploy it outside and it will be reliable in the long term.

2. Objectives of project title:

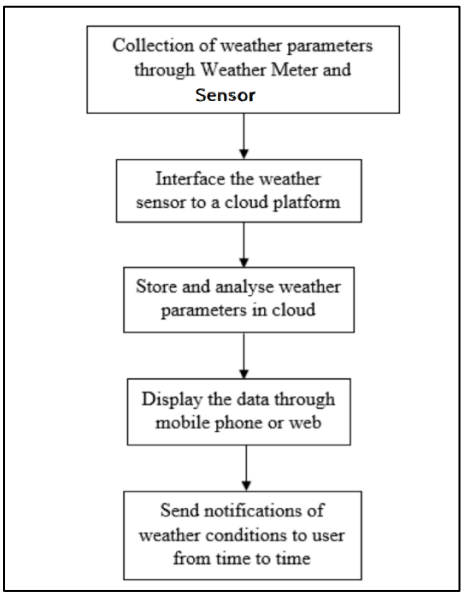
a) Collecting local Weather and environmental data.
b) This IoT based Project Aims to show the current Humidity, Temperature and Pressure (etc.) parameters on the screen as well on the Internet server using Raspberry Pi.
c) To produce a compact product which can be installed at various location for Environmental research purposes

3. Abstract:

Weather is an important factor in daily life and plays an important part in many activities like farming, industry etc. So sometimes, it may be an absolute need to know about immediate weather conditions. However, the current ways to access weather report are through television or using bulk systems, both of which are not all time available or convenient. This Project is aimed to create a prototype system that takes in account different weather factors and make them available to user by different methods. Different factors may include temperature, humidity, pressure, light intensity and rainfall. The technology used in this work on IoT (Internet of Things) that makes access to weather conditions easily as the module is easy to carry around and work with. Different sensors have been used and they gather data then transmit them to Raspberry Pi which acts as a base station. It transmits data to Servers using Wi-Fi or any other connectivity which is available and processed data is displayed on server as well as on LCD screen connected to module.



Block Diagram



Flowchart

4. Applications:

1. In Regions of Environmental Concerns.
2. In Large Campuses to send a Weather Reports to Employees.
3. Can be integrated with Traffic System to collect various Weather parameters of city by utilizing the existing Traffic management system.
4. Can be used by Environmental Hobbyists.

5. Budget (Probable):

Sno.	Components	Cost (Rs.)
1.	Raspberry Pi (Model 3B/pico- In regards to availability and budget)	2800-3100 / 350-500
2.	BME280 Digital Sensor Temperature Humidity Barometric Pressure Sensor Module	450-600
3.	DS18B20 digital thermal probe	250-400
4.	Some resistors, Capacitors	50-100
5.	A breadboard, some jumper wires	190-250
6.	An anemometer, wind vane, and rain gauge. (Can be implemented in regard to the availability)	1300-1800
7.	MCP3008 analogue-to-digital convertor integrated circuit	230-400
8.	Weatherproof enclosure box	200-500
Probable Cost		3020-7150

6.References:

1. *https://projects.raspberrypi.org/en/projects/build-your-own-weather-station*
2. *https://circuitdigest.com/microcontroller-projects/raspberry-pi-iot-weather-station-to-monitor-temperature-humidity-pressure*
3. *https://www.researchgate.net/publication/332676356_Iot_Based_Weather_Station_Using_Raspberry_Pi_3*
4. *https://www.instructables.com/RPi-IoT-Weather-Station/*
5. *https://www.researchgate.net/publication/328865076_Raspberry_Pi_Based_Weather_Station*
6. *https://www.semanticscholar.org/paper/WEATHER-FORECASTING-USING-RASPBERRY-PI-WITH-OF-(-)-VivekBabu-Reddy/5995b99f3af12c742245dbb97ba9708dd0328a13*