IOT LAB INTERNAL-2

6.) monitoring of environemental conditions prevailing the surroundings are very important for the maintainance of health and preventing health hazards such a situatuion has led to the need of efficient weather report generation.so develop an iot system for displaying the snapshot of weather details on the lcd for every few seconds.

Ans)

AIM:to develop an iot based system for displaying the weather on lcd for every few seconds.

OBJECTIVE:the objective of this whole experiment conducuted is that we have to use various sensors to measure the values that effect the weather conditions , hence we will be using some specific sensors to measure the values required for weather conditions measuring.

DESCRIPTION:in this experiment we are using the following sensors:

1)rain sensor.
2)temperature sensor
3)pressure sensor
4)light sensor

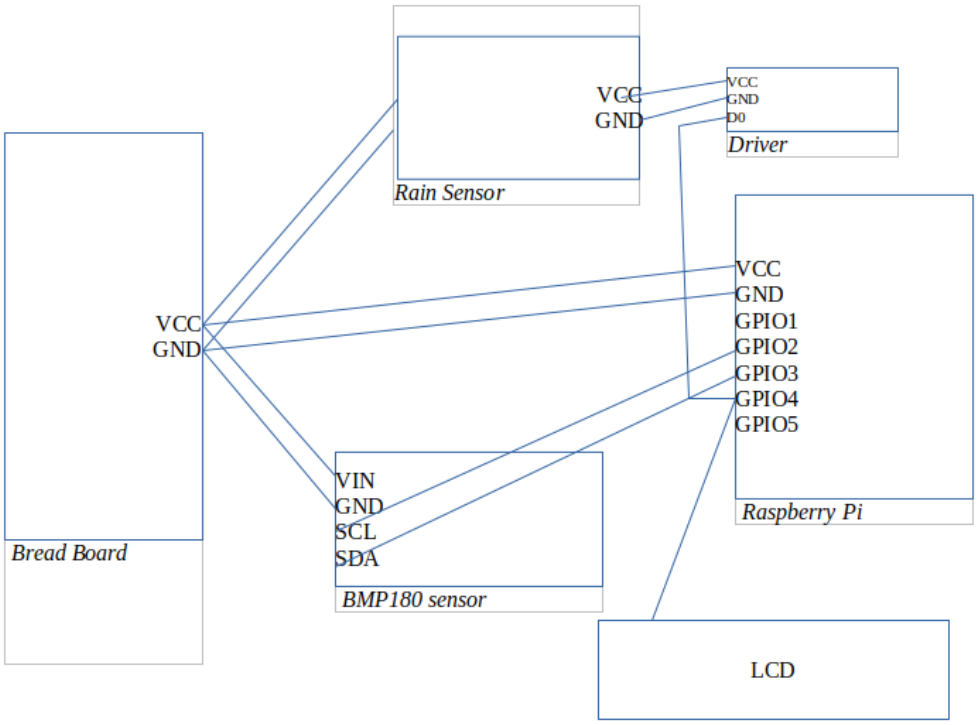
rain sensor- it is used to find weather it is raining or not.
Temperature sensor- this sensor is used to find the temperature of the surroundings.
Pressure sensor- it is used to find out the pressure(i.e finding the air pressure).
Light sensor- it is used to find out if there is excess light or not .

EQUIPMENT:

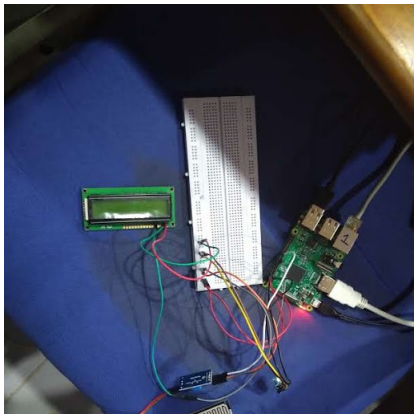
1)rain sensor.
2)temperature sensor.
3)pressure sensor.
4)light sensor.
5)breadboard
6)jumper wires
7)adapter
8)raspberry pi
9)lcd screen

CIRCUIT DIAGRAM:

CIRCUIT:



PROCEDURE:



Connect Raspberry pi to Computer.

1.Connect 5V and DND pins to breadboard to connect to every sensor.
2.Take Rain sensor, connect Vcc pin of rain sensor to 5V of Raspberry pi.
3.Connect GND of rain sensor to GND of Raspberry pi.
4.Connect D0 pin of rain sensor to GPIO7 of Raspberry Pi.
5.Take BMP180 and connect to Raspberry pi.
6.Connect Vin of BMP180 to 5V of Raspberry pi.

7.Connect GND of BMP180 to GND of Raspberry pi.
8.Connect SCL of BMP180 to GPIO2 of Raspberry pi.
9.Connect SDA of BMP180 to GPIO3 of Raspberry pi.
10.Open Terminal and install git.
11.Write the following code:
12.git clone https://github.com/adafruit/ Code.git
13.cd Adafruit-Raspberry-Pi-Python-
14.git checkout 9ff733d59242a02f7ccd0222001ce8
15.cd Adafruit_BMP085
16.Now we can use Adafruit-Raspberry-Pi module to detect temperature, pressure and altitude using BMP180.
17.Connect LCD Display and get output on it.
18.Total Output contains Temperature, pressure, altitude and whether rain is there or not.

CODE:

```
import RPi.GPIO as GPIO
from gpiozero import Buzzer, InputDevice
from time import sleep
from Adafruit_BMP085 import BMP085

bmp = BMP085(0x77)

 temp = bmp.readTemperature()

pressure = bmp.readPressure()

altitude = bmp.readAltitude()

GPIO.setmode(GPIO.BCM)

GPIO.setup(7,GPIO.IN)

while True:
        print("Temperature:   %.2f C" % temp)
        print("Pressure:    %.2f hPa" % (pressure / 100.0))
        print("Altitude:    %.2f" % altitude)
        inp=GPIO.input(7)
        #print(inp)
if (inp):
        print("Rain not Detected")
        sleep(5)
else:
        print("Rain Detected")
        sleep(5)
```

print()

OUTPUT:

temperature:12.80 c
pressure:127.51 hPa
altitude:14449.01
Rain Detected