WEATHER MONITORING SYSTEM

**TEAM 1**

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**HERE IS THE PROGRESS BELOW,THAT SO FAR WE HAVE DONE**

**Raspberry Pi Configuration and Python Program:**

We are using Python language here for the Program. Before coding, user needs to configure Raspberry Pi.

First off all we need to install [Adafruit Python DHT Sensor Library](https://github.com/adafruit/Adafruit_Python_DHT" \t "_blank) files to run this project on Raspberry Pi. To do this we need to follow given commands:

sudo apt-get install git-core

sudo apt-get update

git clone https://github.com/adafruit/Adafruit\_Python\_DHT.git

cd Adafruit\_Python\_DHT

sudo apt-get install build-essential python-dev

sudo python setup.py install

After this, user needs to enable Raspberry Pi I2C by going into RPi Software Configuration Too:

sudo raspi-config

Then go to ‘Advance Options’, select ‘I2C’ and ‘Enable’ it.

Programming part of this project plays a very important role to perform all the operations. First of all we include all required libraries, initiaze variables and define pins for LCD and DHT11.

import sys

import RPi.GPIO as GPIO

import os

import Adafruit\_DHT

import urllib2

import smbus

import time

from ctypes import c\_short

#Register Address

regCall = 0xAA

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In def main(): function, below code is used for sending the data to the server and display it over the LCD, continuously in while loop.

def main():

print 'System Ready...'

URL = 'https://api.thingspeak.com/update?api\_key=%s' % key

print "Wait...."

while True:

(humi, temp)= readDHT()

(pressure) =readBmp180()

lcdcmd(0x01)

lcdstring("Humi#Temp#P(hPa)")

lcdstring(humi+'%'+" %sC %s" %(temp, pressure))

finalURL = URL +"&field1=%s&field2=%s"%(humi, temp)+"&field3=%s" %(pressure)

print finalURL

s=urllib2.urlopen(finalURL);

print humi+ " " + temp + " " + pressure

s.close()

time.sleep(10)

For LCD, def lcd\_init() function is used to initialize LCD in four bit mode, def lcdcmd(ch) function is used for sending command to LCD, def lcddata(ch) function is used for sending data to LCD and def lcdstring(Str) function is used to send data string to LCD. You can check all these functions in Code given afterwards.

Given def readDHT() function is used for reading DHT11 Sensor:

def readDHT():

humi, temp = Adafruit\_DHT.read\_retry(Adafruit\_DHT.DHT11, DHTpin)

return (str(int(humi)), str(int(temp)))

def readBmp180 function is used for reading pressure from the BM180 sensor. BM180 sensor can also give temperature but here we have only used it for calculating pressure.

def readBmp180(addr=deviceAdd):

value = bus.read\_i2c\_block\_data(addr, regCall, 22) # Read calibration data

# Convert byte data to word values

AC1 = convert1(value, 0)

AC2 = convert1(value, 2)

AC3 = convert1(value, 4)

AC4 = convert2(value, 6)

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So this is the basic Raspberry Pi Weather Station, you can further extend it to measure various weather related parameters like wind speed, soil temperature, illuminance (lux), rainfall, air quality etc.

SO FAR ,WE HAVE INSTALLED THE RASPIAN JESSI OS IN RASPBERRY PI 2.

**RASPBERRY PI 2 OS(RASPIAN JESSI)DEMO IMAGE:**

