

APPENDIX A : The simulation code

```
#include <LiquidCrystal.h>

#include <SHT1x.h>


#define dataPin  10

#define clockPin  11

SHT1x sht1x(dataPin, clockPin);

float temperature;

float humidity;


LiquidCrystal lcd(13, 12, 5, 4, 3, 2);

const int buttonPin = 2;

const int ledPin = 13;

int buttonState = 0;


void setup() {

  lcd.begin(16, 2);

  pinMode(ledPin, OUTPUT);

  pinMode(buttonPin, INPUT);}


void loop() {

  lcd.clear();

  temperature= sht1x.readTemperatureC();

  humidity=sht1x.readHumidity();

  lcd.print("Temperature: ");

  lcd.println(temperature);
```

```

lcd.print(" Humidity: ");

lcd.print(humidity);


float p = ((analogRead(A0)/1024.0)+0.095)/0.009-3.2;

lcd.print("Pressure = ");

lcd.print(p,1);

buttonState = digitalRead(buttonPin);


if (buttonState == HIGH) {

    digitalWrite(ledPin, HIGH);

}

else {

    digitalWrite(ledPin, LOW);

}

delay(2000);

}

```

APPENDIX B : The Hardware Code

```
#include<DHT11.h>

#include <SFE_BMP180.h>

#include <Wire.h>

int pin=3;

SFE_BMP180 pressure;

DHT11 dht11(pin);

void setup()

{

    Serial.begin(9600);

    Serial.println("REBOOT");

    while (!Serial) {

        ;

    }

    if (pressure.begin())

        Serial.println("BMP180 init success");

    else

    {

        Serial.println("BMP180 init fail\n\n");

        while(1);

    }

}

void loop()

{
```

```

int err;

float temp, humi;

if((err=dht11.read(humi, temp))==0)
{
    Serial.print("temperature:");

    Serial.print(temp);

    Serial.print(" humidity:");

    Serial.print(humi);

    Serial.println();
}
else
{
    Serial.println();

    Serial.print("Error No :");

    Serial.print(err);

    Serial.println();
}

delay(DHT11_RETRY_DELAY);

char status;

double T,P,p0,a;

Serial.println();

Serial.print("provided altitude: ");

Serial.print(ALTITUDE,0);

Serial.print(" meters, ");

Serial.print(ALTITUDE*3.28084,0);

Serial.println(" feet");

```

```

status = pressure.startTemperature();
if (status != 0)
{
    delay(status);
    status = pressure.getTemperature(T);
    if (status != 0)
    {
        status = pressure.startPressure(3);
        if (status != 0)
        {
            delay(status);

            status = pressure.getPressure(P,T);
            if (status != 0)
            {
                Serial.print("absolute pressure: ");
                Serial.print(P,2);
                Serial.print(" mb, ");
                Serial.print(P*0.0295333727,2);
                Serial.println(" inHg");

                p0 = pressure.sealevel(P,ALTITUDE);
                Serial.print("relative (sea-level) pressure: ");
                Serial.print(p0,2);
                Serial.print(" mb, ");
                Serial.print(p0*0.0295333727,2);

```

```

Serial.println(" inHg");

a = pressure.altitude(P,p0);
Serial.print("computed altitude: ");
Serial.print(a,0);
Serial.print(" meters, ");
Serial.print(a*3.28084,0);
Serial.println(" feet");
}
else Serial.println("error retrieving pressure measurement\n");
}
else Serial.println("error starting pressure measurement\n");
}
else Serial.println("error retrieving temperature measurement\n");
}
else Serial.println("error starting temperature measurement\n");

delay(5000);
}

```