

Assignment 2

Python code for weather prediction

Code:

smart home application

#include <Servo.h>

int output1Value = 0;

int sen1Value = 0;

int sen2Value = 0;

int const gas_sensor = A1;

int const LDR = A0;

int limit = 400;

long readUltrasonicDistance(int triggerPin, int echoPin)

{

pinMode(triggerPin, OUTPUT); // Clear the trigger

digitalWrite(triggerPin, LOW);

delayMicroseconds(2);

// Sets the trigger pin to HIGH state for 10 microseconds

digitalWrite(triggerPin, HIGH);

delayMicroseconds(10);

digitalWrite(triggerPin, LOW);

pinMode(echoPin, INPUT);

// Reads the echo pin, and returns the sound wave travel time in microseconds

return pulseIn(echoPin, HIGH);

}

Servo servo_7;

void setup()

{

Serial.begin(9600); //initialize serial communication

pinMode(A0, INPUT); //LDR

pinMode(A1, INPUT); //gas sensor

pinMode(13, OUTPUT); //connected to relay

servo_7.attach(7, 500, 2500); //servo motor

pinMode(8, OUTPUT); //signal to piezo buzzer

pinMode(9, INPUT); //signal to PIR

pinMode(10, OUTPUT); //signal to npn as switch

pinMode(4, OUTPUT); //Red LED

pinMode(3, OUTPUT); //Green LED

}

void loop()

{

//-----light intensity control-----//

//-----

int val1 = analogRead(LDR);

if (val1 > 500)

{

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        digitalWrite(13, LOW);

Serial.print("Bulb ON = ");

Serial.print(val1);

    }

else

    {

        digitalWrite(13, HIGH);

        Serial.print("Bulb OFF = ");

        Serial.print(val1);

    }


    //----- light & fan control -----//

sen2Value = digitalRead(9);

if (sen2Value == 0)

    {

        digitalWrite(10, LOW); //npn as switch OFF

        digitalWrite(4, HIGH); // Red LED ON,indicating no motion

        digitalWrite(3, LOW); //Green LED OFF, since no Motion detected

        Serial.print("    // NO Motion Detected    ");

    }


if (sen2Value == 1)

    {

        digitalWrite(10, HIGH);//npn as switch ON

        delay(5000);

        digitalWrite(4, LOW); // RED LED OFF

```

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        digitalWrite(3, HIGH); //GREEN LED ON , indicating motion detected

        Serial.print("      // Motion Detected!    ");

        }


//-----

        // ----- Gas Sensor -----//

//-----

int val = analogRead(gas_sensor); //read sensor value

        Serial.print("// Gas Sensor Value = ");

        Serial.print(val); //Printing in serial monitor

//val = map(val, 300, 750, 0, 100);

if (val > limit)

        {

                tone(8, 650);

        }

        delay(300);

        noTone(8);


//----- servo motor -----//


sen1Value = 0.01723 * readUltrasonicDistance(6, 6);


if (sen1Value < 100)

        {

                servo_7.write(90);

```

```
Serial.print("      // Door Open! ; Distance = ");
Serial.print(sen1Value);
Serial.print("\n");

    }

else

    {

        servo_7.write(0);

        Serial.print("      // Door Closed! ; Distance = ");
        Serial.print(sen1Value);
        Serial.print("\n");
    }

    delay(10); // Delay a little bit to improve simulation performance
}
```