**Sensors interfacing with Arduino.**

1. Infrared (IR) Sensor
2. Passive Infrared (PIR) Sensor
3. Ultrasonic Sensor
4. Temperature and Humidity (DHT11) Sensor

**Evaluation Criteria:**

1. Connection diagram.

2. Code for Arduino for each sensor.

3. Successful execution of all four sensor activities.

**Performance-15 Marks**

**Submission-10 Marks**

**Team**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr No** | **Roll No** | **Name** | **Work Done** |
| 1 | 16 | Abdullah Imdad Husain Qureshi | Helped in Coding+Connections |
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**Codes:**

1)

/\*\*\* Arduino with IR Sensor \*\*\*/

int SensorPin = 2;

int OutputPin = 13;

void setup() {

pinMode(OutputPin, OUTPUT);

pinMode(SensorPin, INPUT);

Serial.begin(9600);

}

void loop() {

int SensorValue = digitalRead(SensorPin);

Serial.print(&quot;SensorPin Value: &quot;);

Serial.println(SensorValue);

delay(1000);

if (SensorValue==LOW){ // LOW MEANS Object Detected

digitalWrite(OutputPin, HIGH);

}

else

{

digitalWrite(OutputPin, LOW);

}

}

2)

const int PIR\_SENSOR\_OUTPUT\_PIN = 4; /\* PIR sensor O/P pin \*/

int warm\_up;

void setup() {

pinMode(PIR\_SENSOR\_OUTPUT\_PIN, INPUT);

Serial.begin(9600); /\* Define baud rate for serial communication \*/

delay(20000); /\* Power On Warm Up Delay \*/

}

void loop() {

int sensor\_output;

sensor\_output = digitalRead(PIR\_SENSOR\_OUTPUT\_PIN);

if( sensor\_output == LOW )

{

if( warm\_up == 1 )

{

Serial.print(&quot;Warming Up\n\n&quot;);

warm\_up = 0;

delay(2000);

}

Serial.print(&quot;No object in sight\n\n&quot;);

delay(1000);

}

else

{

Serial.print(&quot;Object detected\n\n&quot;);

warm\_up = 1;

delay(1000);

}

}

3)

const int pingPin = 2; // Trigger Pin of Ultrasonic Sensor

const int echoPin = 4; // Echo Pin of Ultrasonic Sensor

void setup() {

   Serial.begin(9600); // Starting Serial Terminal

}

void loop() {

   long duration, inches, cm;

   pinMode(pingPin, OUTPUT);

   digitalWrite(pingPin, LOW);

   delayMicroseconds(2);

   digitalWrite(pingPin, HIGH);

   delayMicroseconds(10);

   digitalWrite(pingPin, LOW);

   pinMode(echoPin, INPUT);

   duration = pulseIn(echoPin, HIGH);

   inches = microsecondsToInches(duration);

   cm = microsecondsToCentimeters(duration);

   Serial.print(inches);

   Serial.print(&quot;in, &quot;);

   Serial.print(cm);

   Serial.print(&quot;cm&quot;);

   Serial.println();

   delay(100);

}

long microsecondsToInches(long microseconds) {

   return microseconds / 74 / 2;

}

long microsecondsToCentimeters(long microseconds) {

   return microseconds / 29 / 2;

}

4)

#include &lt;dht11.h&gt;

#define DHT11PIN 2

dht11 DHT11;

void  setup()

{

  Serial.begin(9600);

}

void loop()

{

  Serial.println();

  int chk = DHT11.read(DHT11PIN);

  Serial.print(&quot;Humidity (%): &quot;);

  Serial.println((float)DHT11.humidity, 2);

  Serial.print(&quot;Temperature  (C): &quot;);

  Serial.println((float)DHT11.temperature, 2);

  delay(2000);

}

**Fill your details as per following points**

* **Photos & Videos of Actual implementation:**

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* **Conclusions:**

We learnt the working of different types of sensors and the coding behind it.