Marwadi University	**Marwadi University** **Faculty of Technology** **Department of Information and Communication Technology**	
Subject: Foundation Skills in Sensor Interfacing (01CT11032)	**Aim:** To interface PIR sensor with Arduino.	
Experiment No: 01	**Date:16-12-21**	**Enrolment No:92100133020**

Apparatus:

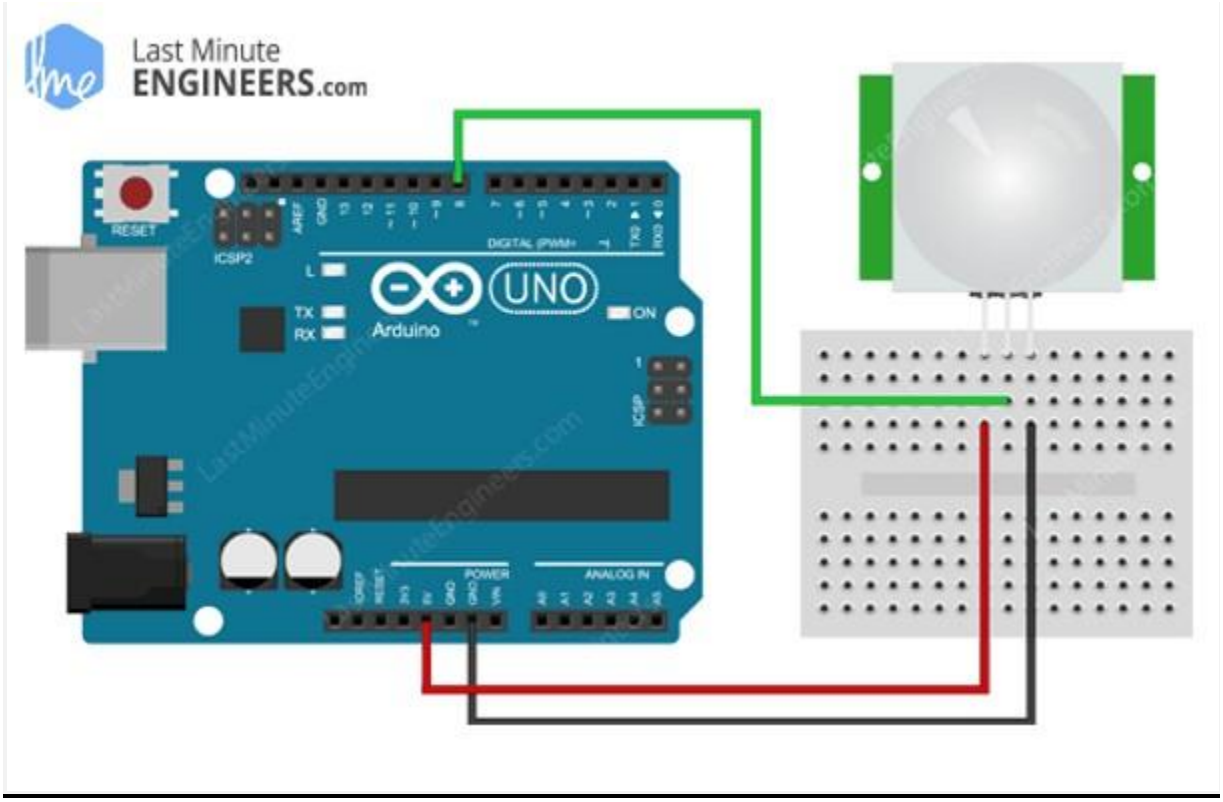
PIR sensor, Arduino UNO R3, USB Cable, Jumper Wires,LED, PC/Laptop.

Theory:

PIR sensor

A passive infrared sensor is an electronic sensor that measures infrared light radiating from objects in its field of view. They are most oftesn ued in PIR-based motion detectors. PIR sensors are commonly used in security alarms and automatic lighting applications.

Interfacing Diagram:



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Code:

```
int ledPin = 13;                // choose the pin for the LED
int inputPin = 2;               // choose the input pin (for PIR sensor)
int pirState = LOW;             // we start, assuming no motion detected
int val = 0;                    // variable for reading the pin status


void setup() {
  pinMode(ledPin, OUTPUT);      // declare LED as output
  pinMode(inputPin, INPUT);     // declare sensor as input

  Serial.begin(9600);
}
void loop(){
  val = digitalRead(inputPin);  // read input value
  if (val == HIGH) {            // check if the input is HIGH
    digitalWrite(ledPin, HIGH);  // turn LED ON
    if (pirState == LOW) {
      // we have just turned on
      Serial.println("Motion detected!");
      // We only want to print on the output change, not state
      pirState = HIGH;
    }
```

```
  }
else {
   digitalWrite(ledPin, LOW); // turn LED OFF
   if (pirState == HIGH){
     // we have just turned of
     Serial.println("Motion ended!");
     // We only want to print on the output change, not state
     pirState = LOW;
   }
  }
}
```

Output:

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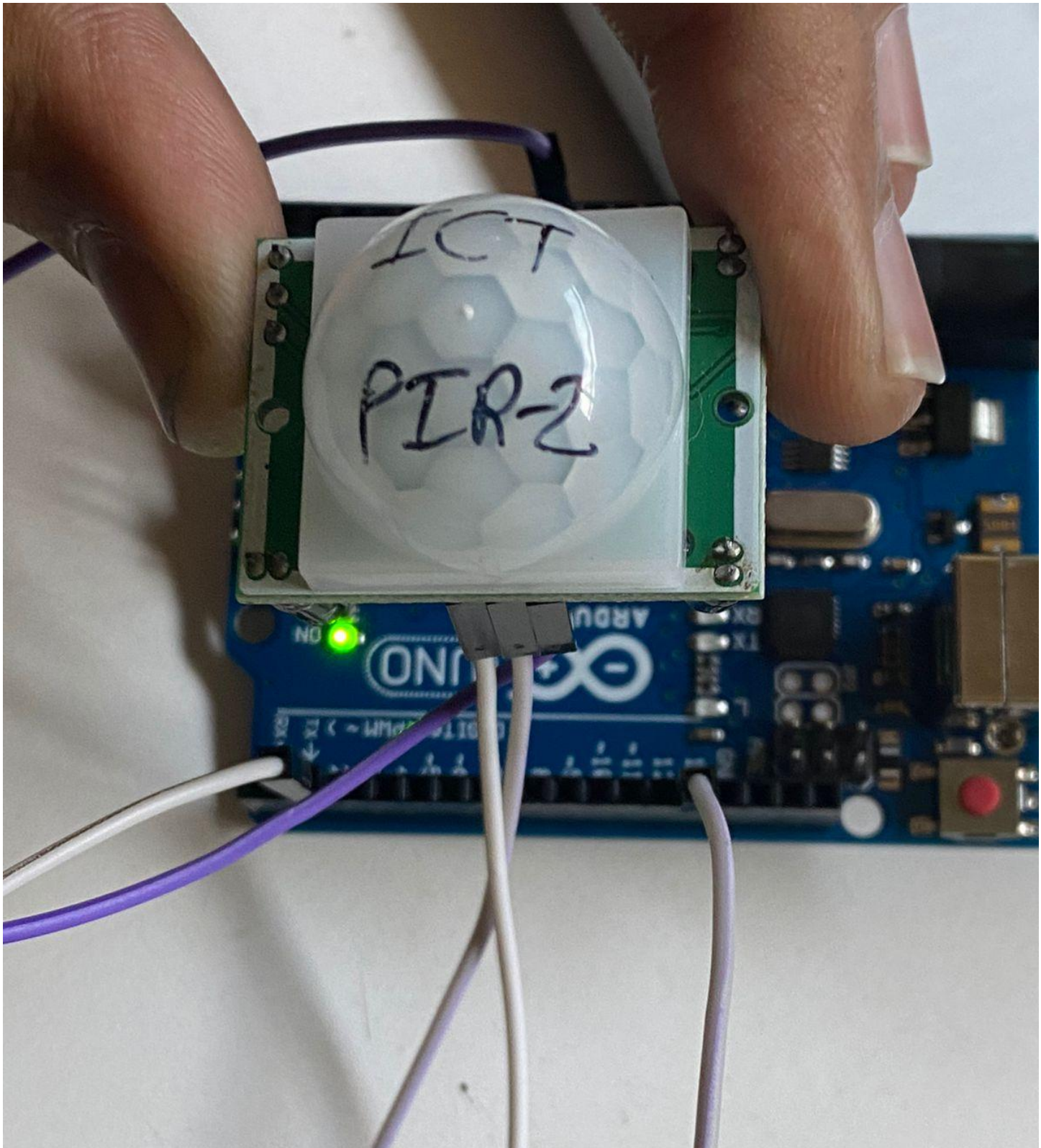

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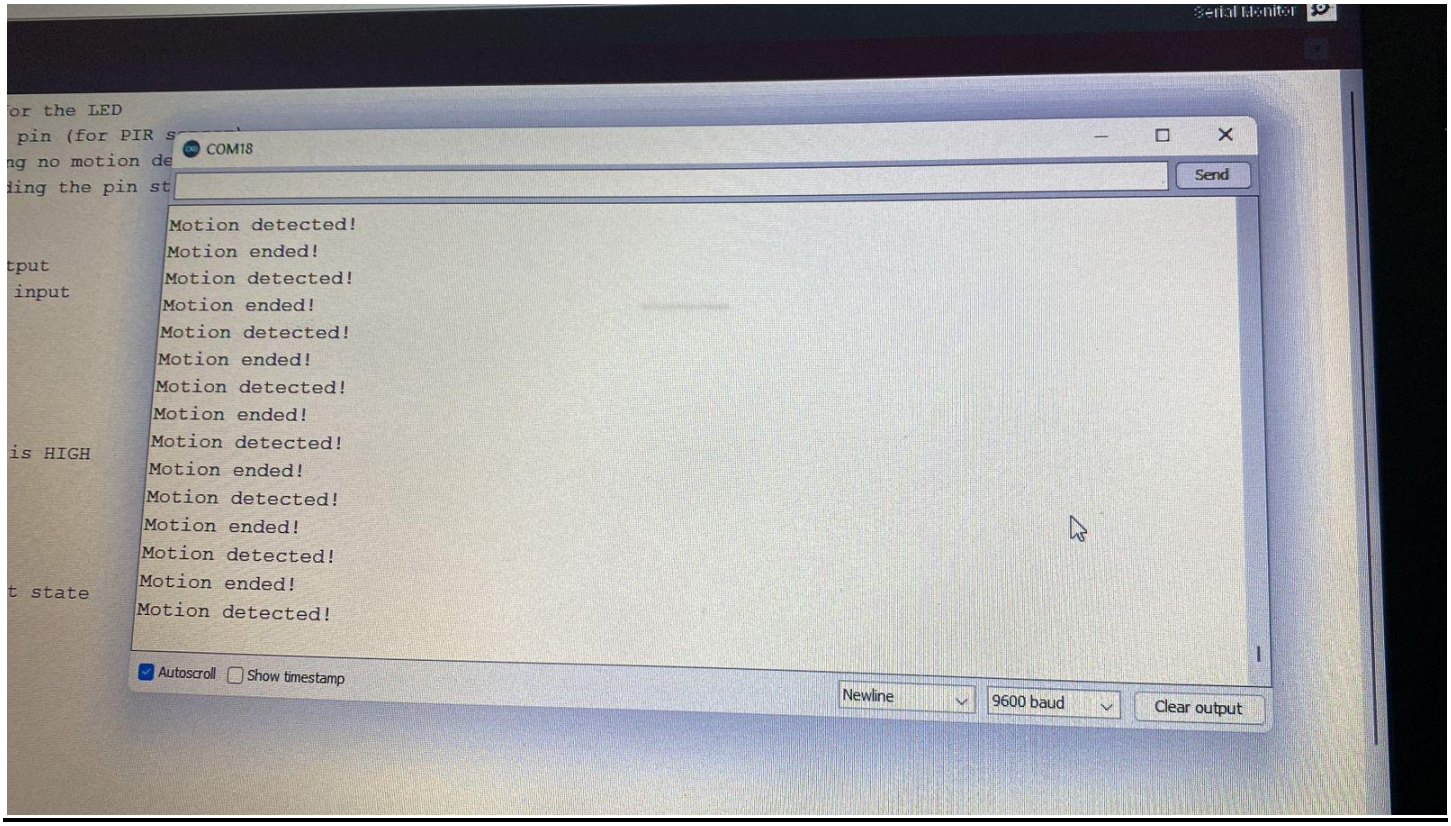

Observations:

Nearly all PIRs will have slightly different specifications, although they all pretty much work the same.

The objects with the temperature above 0K emits heat energy in the form of infrared radiations, the hotter the body, more radiations it emits.

This sensor is specially designed to detect infrared rays of different levels.

Conclusion:

A Pyroelectric Sensor has two rectangular slots in it made of a material that allows the infrared radiation to pass through it. Behind these, there are two separate infrared sensor electrodes, one responsible for producing a positive output and the other a negative output. The reason for that is that we are

looking for a change in IR levels and not ambient IR levels. The two electrodes are wired up so that they cancel each other out. If one half sees more or less IR radiation than the other, the output will swing high or low.

When the sensor is idle, i.e. when there is no movement around the sensor, both slots detect the same amount of infrared radiation, resulting in a zero output signal.

Post Session Exercise:

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