Embedded Systems Task-2

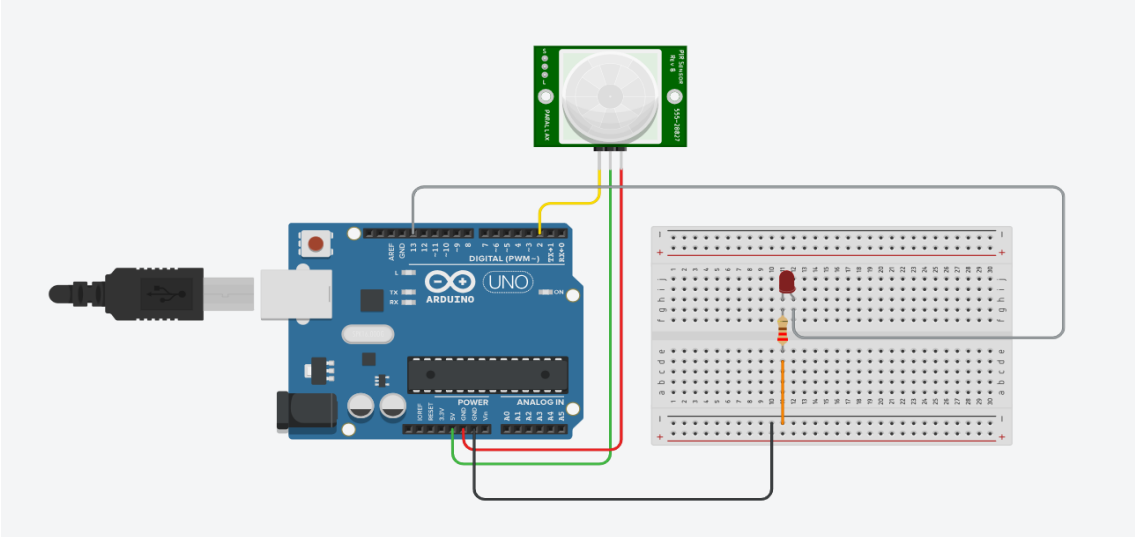
Mini Project: Motion Detection System

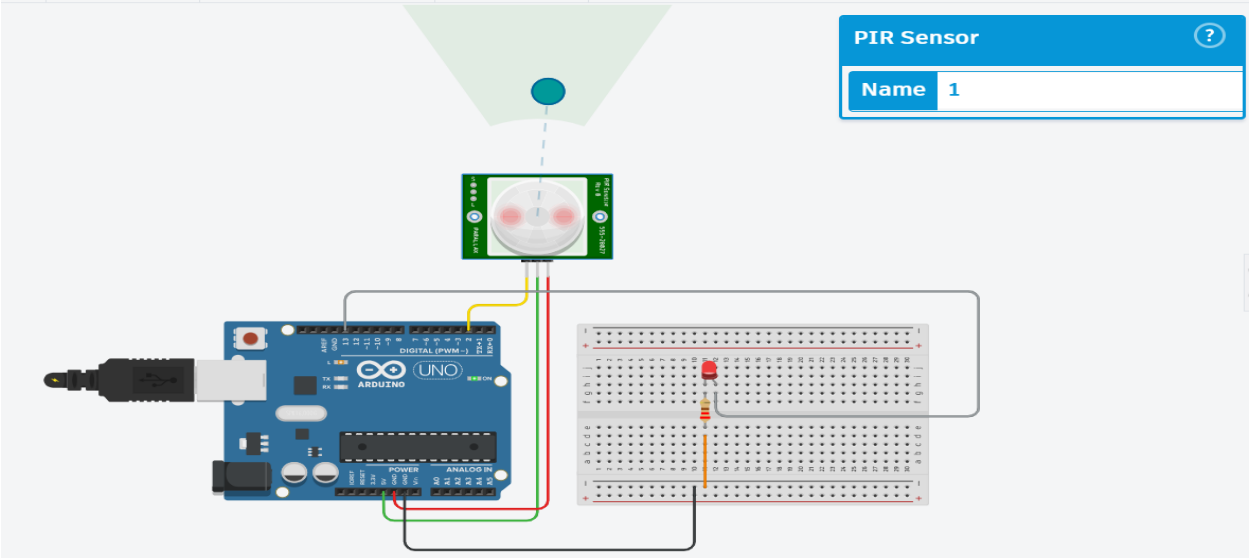
Submitted by: M PRIYADHARSHINI

Course: Embedded Systems & IoT Device Design

Organization: Maincrafts Technology

Circuit Diagram:



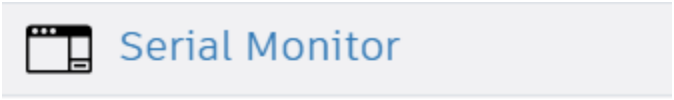


Source code:

```
int pirPin = 2;      // PIR sensor output pin
int ledPin = 13;     // LED pin
void setup() {
  pinMode(pirPin, INPUT);    // Set PIR pin as input
  pinMode(ledPin, OUTPUT);   // Set LED pin as output
  Serial.begin(9600);
  Serial.println("PIR Sensor Test Started");
}
void loop() {
  int sensorValue = digitalRead(pirPin);   // Read sensor signal

  if (sensorValue == HIGH) {
    digitalWrite(ledPin, HIGH);            // Turn LED ON
    Serial.println("Motion Detected");
    delay(1000);                           // delay to avoid flicker
  }
  else {
    digitalWrite(ledPin, LOW);             // Turn LED OFF
    Serial.println("No Motion Detected");
    delay(1000);
  }
}
```

Output:




```
PIR Sensor Test Started
No Motion Detected
No Motion Detected
Motion Detected
Motion Detected
Motion Detected
No Motion Detected
```

How PIR Sensor Works:

- The PIR sensor can detect the body heat of humans or animals.
- When a person or animal moves in front of the sensor, it notices a change in heat energy.
- At that moment, the sensor sends a HIGH signal to the Arduino, meaning motion is detected.
- After a few seconds, if there's no more movement, the sensor sends a LOW signal, meaning no motion.

What the Code Does:

- The Arduino keeps checking the PIR sensor to see if any motion is detected.
- When motion is detected:
  - The Arduino **turns ON the LED**.
  - It shows **"Motion Detected!"** on the Serial Monitor.
- When no motion is detected:
  - The Arduino **turns OFF the LED**.
  - It shows **"No Motion"** on the Serial Monitor.