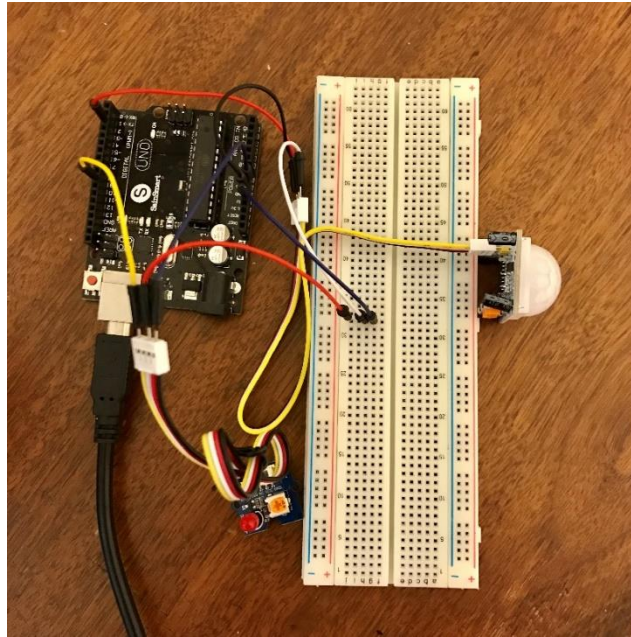


# How to Build a Motion Detector with Arduino



This tutorial will show you how to build a motion detector with Arduino. The system detects the presence of a movement within its detection range and sends a signal to Arduino. Then Arduino lights up the LED when the motion signal is received.

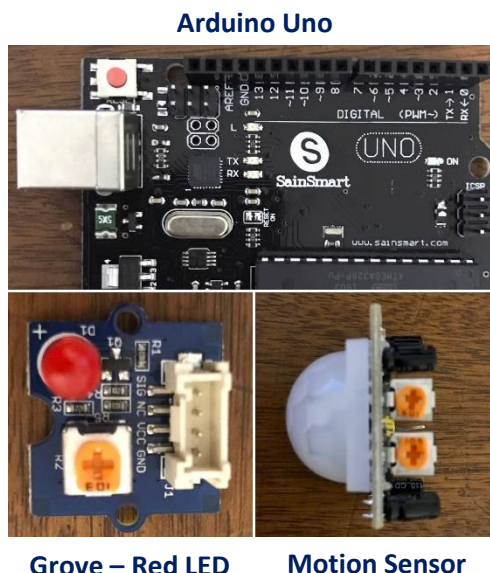
## Required Materials

### Hardware:

1. Arduino Uno
2. PIR Motion Sensor
3. Grove – Red LED
4. Connecting wires.

### Software:

1. Arduino IDE
2. Source code (included)



Grove – Red LED

Motion Sensor

## Hardware Connections

1. Connect the Vcc and GND on the motion sensor to the Arduino's 5V and GND pins.
2. Connect the Output signal pin on the motion sensor to the Arduino's digital pin 2, so that the input signal goes HIGH after detecting the motion.
3. Connect the Vcc and GND on the LED to the Arduino's 5V and GND pins.
4. Connect the SIG pin on the LED to the Arduino's digital pin 9. If the motion sensor detects the movement, the input of pin 9 is HIGH and then the LED blinks. If there's no movement within the detective range, the input of pin 9 is LOW and the LED will not emit light.

## Source Code

```
#define PIR_MOTION_SENSOR 2 //use pin2 to receive the signal from motion sensor
#define LED 9 //the Grove - LED is connected to pin 9

void setup() {
    pinMode(PIR_MOTION_SENSOR, INPUT);
    pinMode(LED, OUTPUT);
}

void loop() {
    if(MotionDetected()) { //if it detects anyone moving
        digitalWrite(LED, HIGH); //sets the LED on
        delay(500); //waits for a second
        digitalWrite(LED, LOW); //sets the LED off
        delay(500); //waits for a second
    } else {
        digitalWrite(LED, LOW);
    }
}

/*Function: Detect whether anyone moves in its detecting range*/
boolean MotionDetected() {
    int sensorValue = digitalRead(PIR_MOTION_SENSOR);
    if(sensorValue == HIGH) { //if the sensor output goes HIGH
        return true;
    } else {
        return false;
    }
}
```

## Test Run

1. Copy and paste the code into Arduino IDE.
2. From the IDE, load the code to Arduino with upload button.
3. Move your hand in front of the motion sensor.
4. The LED will blink after detecting your hand movement.