Jeide, Matthew

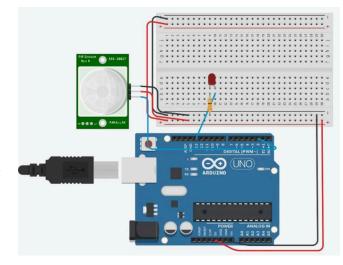
3/11/2025 Period 2

W10B: DE [PIR Motion Sensor With Arduino & LED] Arduino Variables Tutorial

Introduction

Programming languages have their own grammar called "syntax". Programs written with the Ardiuno software are called Sketches. A **Sketch** (program written with **Arduino**) will contain: a title, **constants**, **variables**, setup() functions, and loop() functions.

If the syntax of a language is not followed, the program will not compile correctly. This means that no executable code will be produced. Fortunately, the **Arduino** integrated development environment (IDE) will provide error messages that will help you fix your "bad grammar"... called "syntax errors". One of the most common syntax errors that students make



is forgetting that lines of code need to end with a semicolon.

Equipment

- Computer with Arduino Software
- PIR Motion Sensor and Arduino- Make sure to follow the pin layout on the sensor
- One Multiple color LED

Procedure

Introduction: Create a "New Sketch" and enter the code:

Type the code on the Arduino Software. Note that a correction must be made on this code. Pay attention to the pin layout on the TinkerCAD Diagram.

Step 2: Write the Code

- 1) Open the **Arduino IDE** on your computer.
- 2) Enter the following code:

```
int pirPin = 7; // Pin connected to PIR sensor output
int ledPin = 8; // Pin connected to LED

void setup() {
  pinMode(pirPin, INPUT); // Set PIR sensor pin as input
  pinMode(ledPin, OUTPUT); // Set LED pin as output
  Serial.begin(9600); // Initialize serial communication (optional)
}

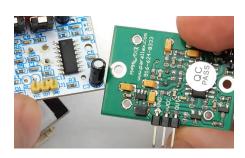
void loop() {
  int motionDetected = digitalRead(pirPin); // Read PIR sensor output
  if (motionDetected == HIGH) { // If motion is detected
   digitalWrite(ledPin, HIGH); // Turn on LED
  Serial.println("Motion Detected!"); // Print message to serial
  monitor
  } else {
   digitalWrite(ledPin, LOW); // Turn off LED
  }
  delay(100); // Small delay to stabilize sensor readings
}
```

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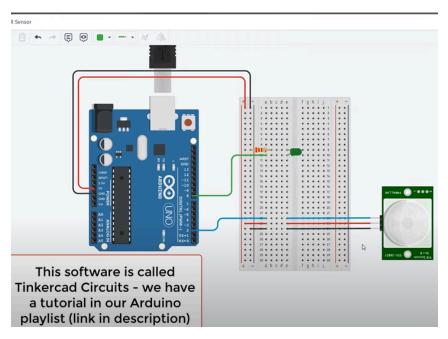
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1. Use the link provided to understand the use of variables using C++ Code. Use the Arduino to program the code and the reference guide: **REFERENCE LINK**:



https://www.instructables.com/PIR-Motion-Sensor-With-Arduino-LED/



Use this code:

YOUTUBE TUTORIAL:

What does the C++ code do? Did you set the pins correctly on your Arduino?

This code detects if something moves in the PIR's range and turns on the LED if so.

2. Using the code above. You are able to use the code provided or the code from the Youtube tutorial. Insert it below.

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Insert the C++ Code below and the comments to each of the parts of the code. Naming conventions must be followed. For Example "cat" is the same as blink LED.

```
// PIR sensors
// Pin 12 connected to a PIR Sensor
// Pin 13 connected to LED
// Common cathode seven segment display
void setup() {
 pinMode(12, INPUT); // Set PIR sensor pin as input
 pinMode(13, OUTPUT); // Set BLAH BLAH sensor pin as input
void loop() {
 // Read the PIR state
 int motionDetected = digitalRead(12); // Read PIR sensor output
 if (motionDetected == HIGH) { // If motion is detected
  digitalWrite(13, HIGH); // Turn on LED
  Serial.println("Motion Detected!"); // Print message to serial monitor
 } else {
  digitalWrite(13, LOW); // Turn off LED
 delay(100); // Small delay to stabilize sensor readings
```

3. E-Portfolio video with updated code.

E-Portfolio Published link with video file. Upload the file to your Google Drive to upload on your Portfolio. YouTube Videos are preferred.

https://sites.google.com/riversideunified.org/matthewjeide/notes/w10b-de-pir-motion-sensor-with-arduino-led-arduino-variables-tutorial

Conclusion

Answer in complete sentences each of the questions below.

1. How can this sensor be used to design a project for parents with small children?

Maybe if parents don't want their small children going near specific rooms/objects, you could have a PIR sensor effectively act as a trip alarm.