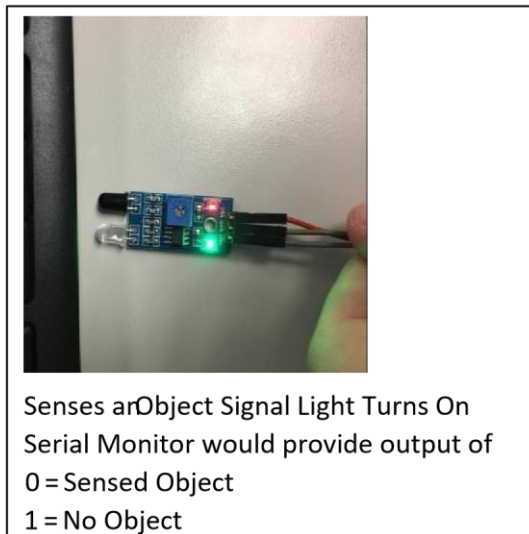
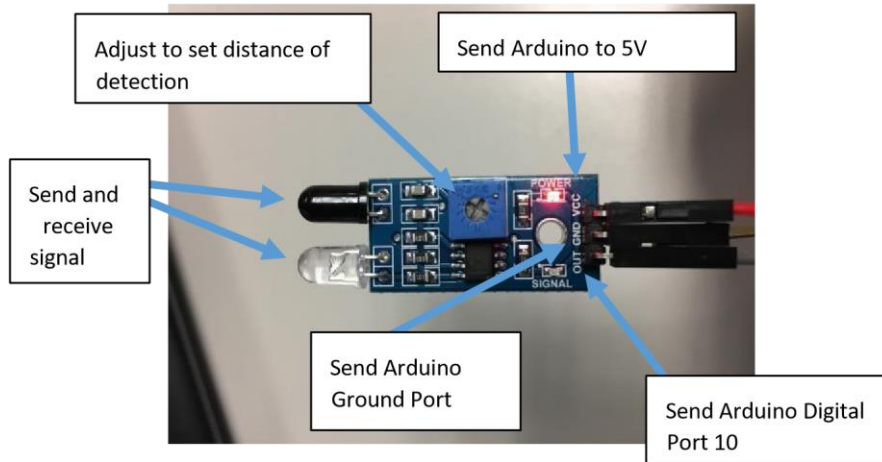


Program: IR Sensor

By: Matthew Jourden
Brighton High School

Goal: is to detect close objects and stop the motor when an object is near and run the motor if nothing is detected. These are used for close detection purposes and do not have a the potential for outside interference like an ultrasonic sensor that can be disturbed by outside noises.

1. Wiring Diagram for IR



2. Wire a RGB LED to Arduino

- a. Use 220 Ohm Resistor
- b. Arduino Digital Port 13

Program

```
int LED = 13;           // Set to the LED Light on the Arduino Board
int IROut = 10;        // Set to OUT on the IR Sensor
int val;               // Reads value of IR Sensor

void setup() {
  // put your setup code here, to run once:
  pinMode (LED, OUTPUT);
  pinMode (IROut, INPUT);
}

void loop() {
  // put your main code here, to run repeatedly:
  val = digitalRead (IROut); // Reads a value to determine proximity to an object
  if (val == HIGH)           // Checks to see if obstacle is sensed to turn LED ON
  {
    digitalWrite (LED, HIGH);
  }
  else                         // Else no obstacle is sensed turn LED OFF
  {
    digitalWrite (LED, LOW);
  }
}
```

Assignment: Change the single bulb LED to a LED RGB Light to turn

Wire a single RGB LED in place of 2 individual LEDs. See next page for wiring and code (NOTE: code uses a function called SetColor to send values 0-255 for each the Red, Green and Blue Spectrum)

Green: Object is NOT Present

Red: Object is Present

Reference Tutorial RGB LED

Code:

```
1. int redPin = 11;
2. int greenPin = 10;
3. int bluePin = 9;
4.
5. //uncomment this line if using a Common Anode LED
6. //#define COMMON_ANODE
7.
8. void setup()
9. {
10. pinMode(redPin, OUTPUT);
11. pinMode(greenPin, OUTPUT);
12. pinMode(bluePin, OUTPUT);
13. }
14.
15. void loop()
16. {
17. setColor(255, 0, 0); // red
18. delay(1000);
19. setColor(0, 255, 0); // green
20. delay(1000);
21. setColor(0, 0, 255); // blue
22. delay(1000);
23. setColor(255, 255, 0); // yellow
24. delay(1000);
25. setColor(80, 0, 80); // purple
26. delay(1000);
27. setColor(0, 255, 255); // aqua
28. delay(1000);
29. }
30.
31. void setColor(int red, int green, int blue)
32. {
33. analogWrite(redPin, red);
34. analogWrite(greenPin, green);
35. analogWrite(bluePin, blue);
36. }
```

setColor is the name of the function, similar to void setup or void loop. Within the Void Loop setColor is called with 3 Values ranging from 0 to 255 that represent Red (R), Green (G) and Blue (B). These three values are sent to the void setColor Function below and become the values for the integers red, blue, green in that order. The values are then assigned to the specific pin location on the Arduino, mixing the values to create different colors.

Sample code show 6 different color combinations, but more can be created by changing the RGB values between 0-255

Sample Program to Call a Function

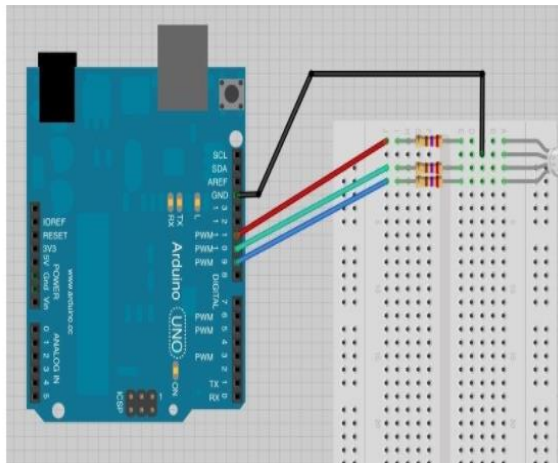
```
void setup() {
  inches = ultrasonic (x);
}

long ultrasonic (long microseconds)
{
  Ultrasonic Sensor Code
  return microseconds
}
```

Variable x is passed to Function ultrasonic

Microseconds is returned back to Void Setup where the function was called and overwrite the variable x to what microseconds equals

Wiring Schematic



Note: Color Wires equal the pin color on the RGB LED