

Introduction to Arduino

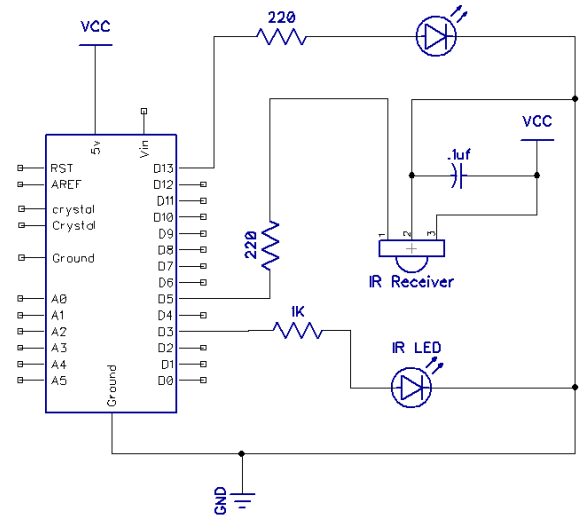
Infrared Detection

Mark /10

Note: Marks will be taken off for messy breadboarding

In this lab you will be introduced to IR LEDs, the Panasonic TSOP4838 IR sensor and another library that does not come with the Arduino software.

1. You need to ensure you have an IR LED. The problem with IR is that it cannot be seen by the naked eye. HOWEVER, by using a digital camera, you can pick up the light. Check the LED to ensure it is IR by connecting it to positive, then to a 220ohm resistor that connects to negative. Look through a camera at it, it should be on. Place a piece of heatshrink on the anode of the IR LED so it is easily recognized. At the same time, place a larger piece of heatshrink over the IR LED so that the entire LED except for the end is covered.
2. The TSOP4838IR sensor picks up a 38khz IR LED signal. When a signal is detected, the output pin goes LOW.
3. The code for this can be quite difficult, so a library will be used. However, the library does not come standard with the Arduino software and it had to be copied into a directory called "libraries" in the Arduino folder.
4. Copy and then upload the code.
5. When you interrupt the beam or the beam bounces off something, the LED will turn on.



```
/* This ir test uses a library */
#include <IRremote.h>

int IR_PIN = 3;
int DETECT_PIN = 5;
int STATUS_PIN = 13;
IRsend irsend;

void setup()
{
  pinMode(DETECT_PIN, INPUT);
  pinMode(STATUS_PIN, OUTPUT);
  pinMode(IR_PIN, OUTPUT);
  irsend.enableIROut(38);
  irsend.mark(0);
}

void loop() {

  int sensorValue = digitalRead(DETECT_PIN);
  if (sensorValue == HIGH)
  {
    digitalWrite(STATUS_PIN, HIGH);
  }

  if (sensorValue == LOW)
  {
    digitalWrite(STATUS_PIN, LOW);
  }

}
```

Show the teacher the working lab and code.

Marks will be taken off if the wires on the breadboard are not flat!!!