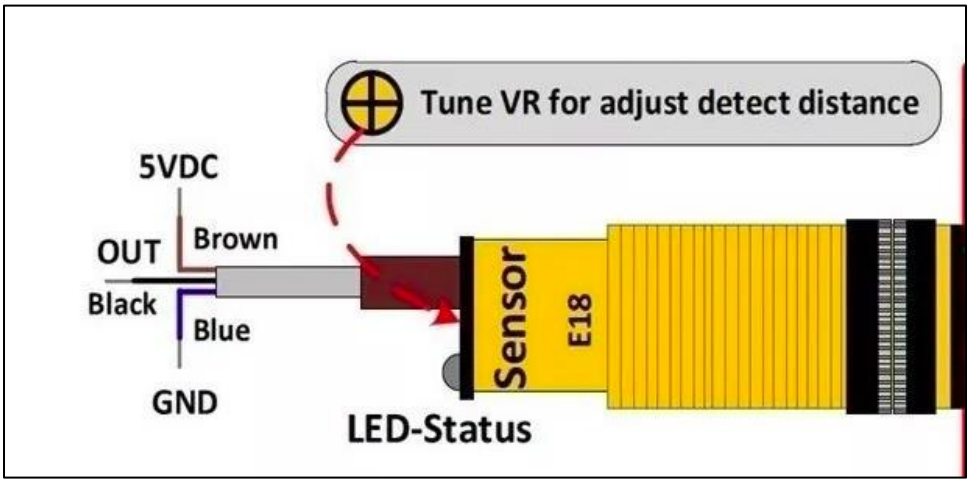
CAPTURING IMAGES USING IR SENSOR & WEBCAM

Components

- Buy an IR sensor rated 5 Volts (https://www.twinschip.com/Proximity_Sensor_E18-D80NK)
- Buy an Arduino Nano board along with its Power Cable (https://www.twinschip.com/Arduino_Nano_V3.0?search=arduino%20nano&description=true)
- Buy a small Bread Board for making the connections. (https://www.twinschip.com/Breadboard_400_Tie-point?search=bread%20board&description=true)
- Buy a 4K Webcam Camera (https://www.amazon.com/dp/B01N5UOYC4?ref=emc_p_m_5_i&th=1)

IR Sensor Wiring Diagram

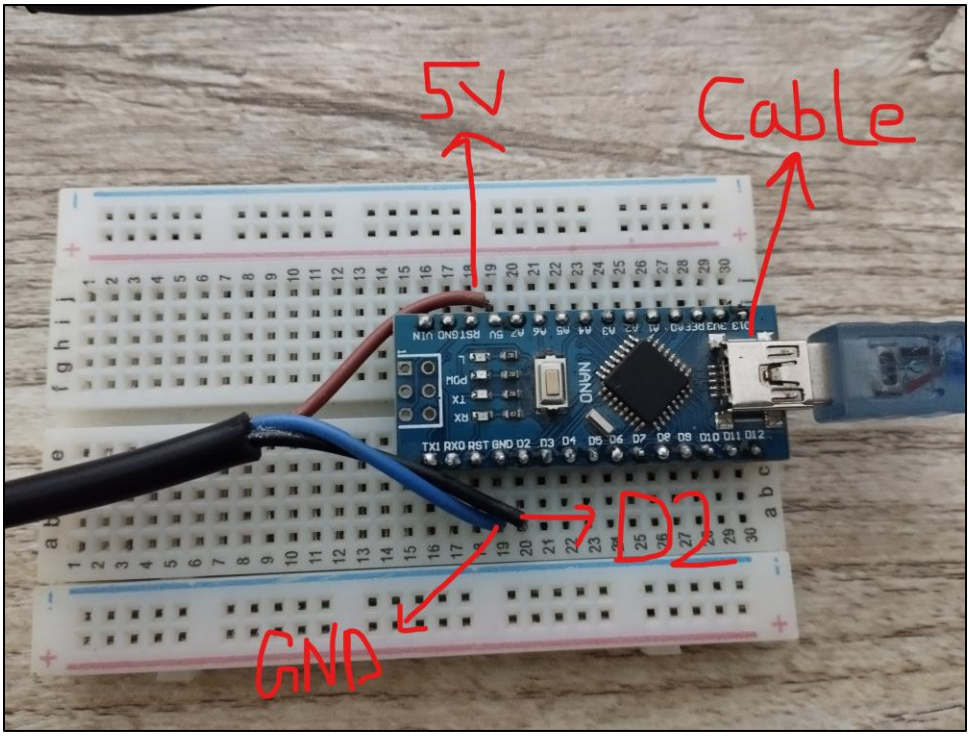
- Use three wires of IR sensor to make connections with the Arduino Nano.
- **Brown Wire** = Connect to 5V DC supply
- **Blue Wire**= Connect to Common Ground
- **Black Wire** = Connect to Interrupt Pin of Arduino to get Trigger Signal.



Connecting and Interfacing IR sensor with Arduino Nano

- Install Arduino Software on your Windows PC (https://www.arduino.cc/en/software)
- Install Serial CH340 Drivers of Arduino on your Windows PC (https://sparks.gogo.co.nz/ch340.html), unzip the file and run the exe file to install the CH340 drivers on your system.

Circuit Diagram:

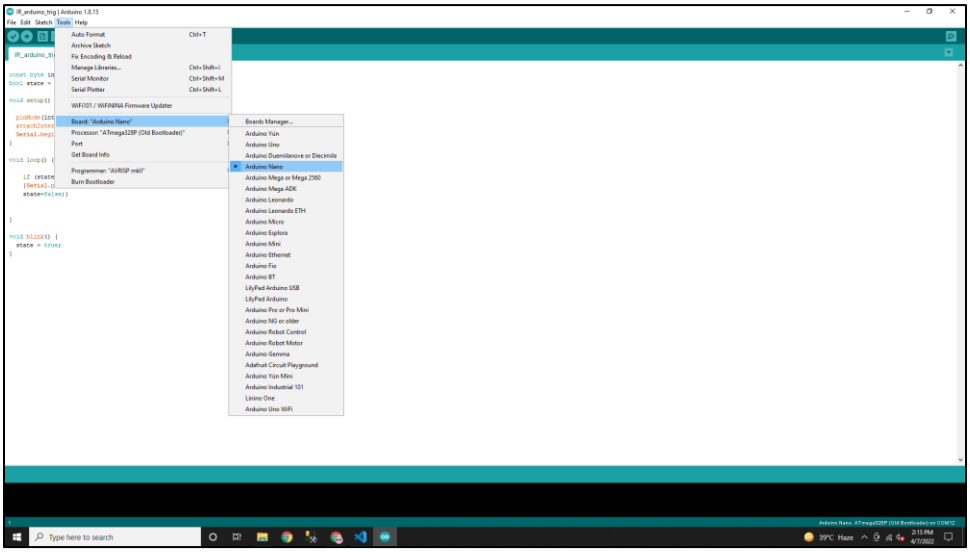


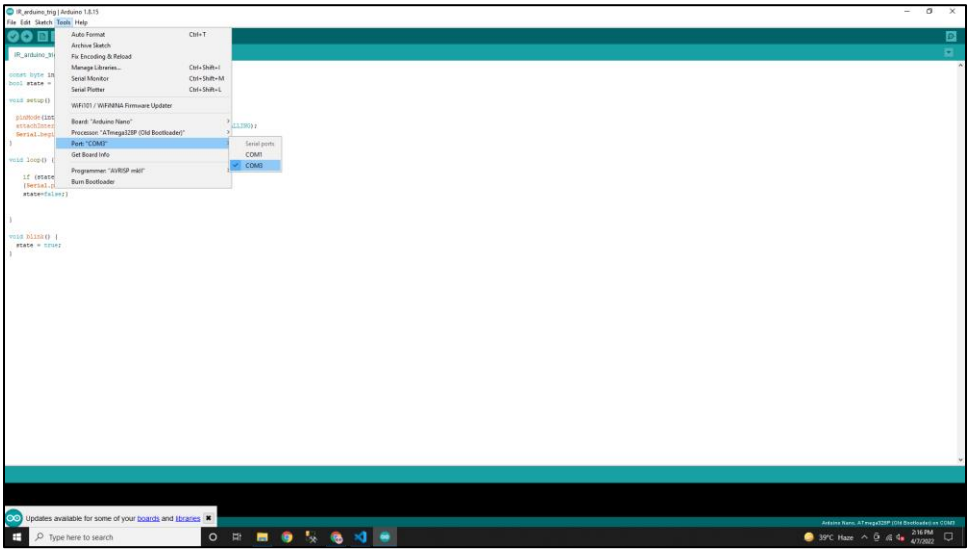
Step #1:

1. Connect Brown Wire to **5V** pin of Arduino
2. Connect Blue Wire to **GND** of Arduino
3. Connect Black Wire to **Pin 2 (D2)** of Arduino
4. Finally connect the Arduino with your PC using the Arduino Cable

Step #2:

Open the Arduino Software and Select **Port** and Arduino **Board** from the **Tools** Options as shown





Step #3:

Write the following Code in the Arduino software

IR_arduino_trig

```
const byte interruptPin = 2;
bool state = false;

void setup() {

  pinMode(interruptPin, INPUT_PULLUP);
  attachInterrupt(digitalPinToInterrupt(interruptPin), blink, FALLING);
  Serial.begin(9600);
}

void loop() {

    if (state == true)
    {Serial.println(1);
    state=false;}


}

void blink() {
  state = true;
}
```

Step #4:

Burn the code inside the Arduino by clicking this upload button on the top right and then close the Arduino software.

CONNECTING WEBCAM TO THE SYSTEM AND CAPTURING IMAGE

Step #1:

Connect the Webcam camera to the PC by plugging the USB cable of webcam into one of the USB ports present in the PC.

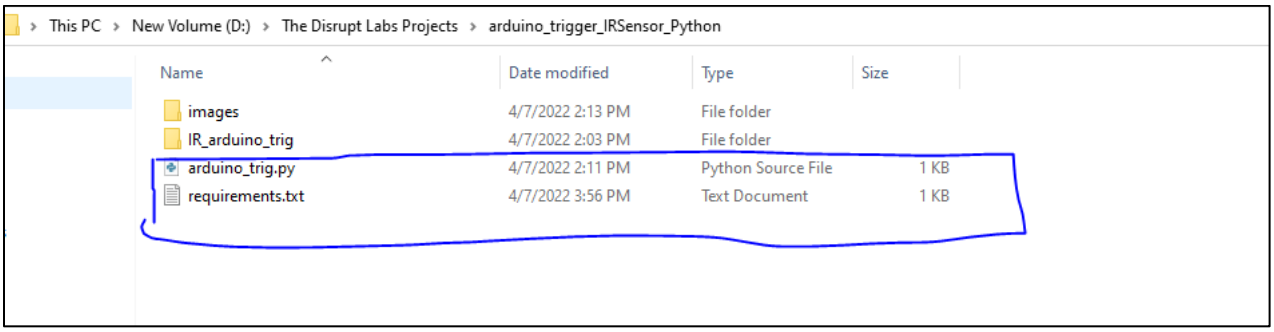
Step #2:

Install Anaconda Distribution on your Windows System (https://www.anaconda.com/products/distribution)

Installation Steps for Anaconda (https://docs.anaconda.com/anaconda/install/windows/)

Step #3:

Create a folder in your PC and paste the **python** & **requirements.txt** files inside that folder.

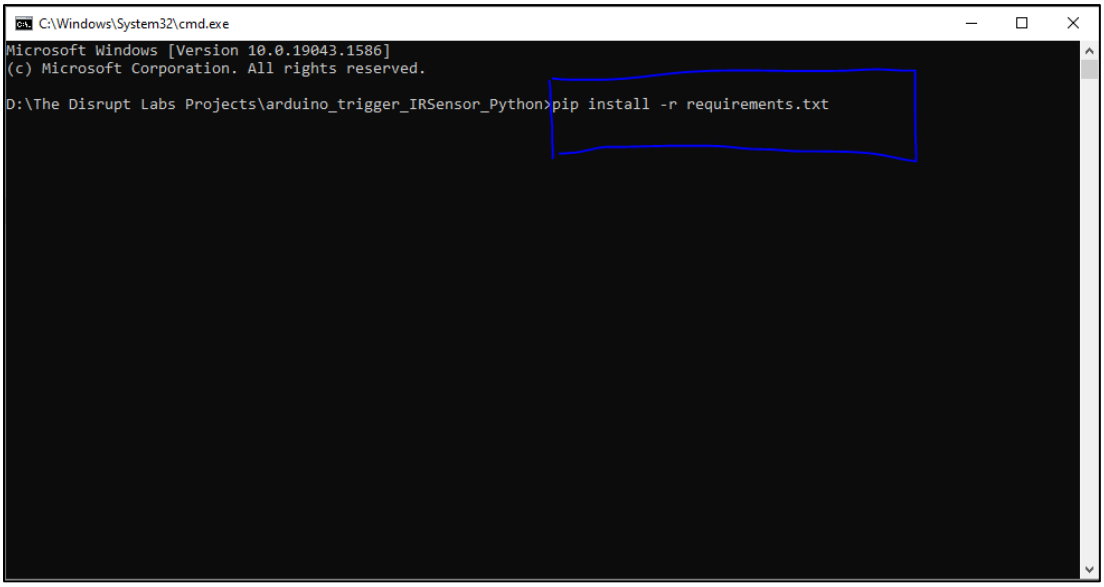


Step #4:

Open command line interface in your current folder by typing **cmd** and pressing enter

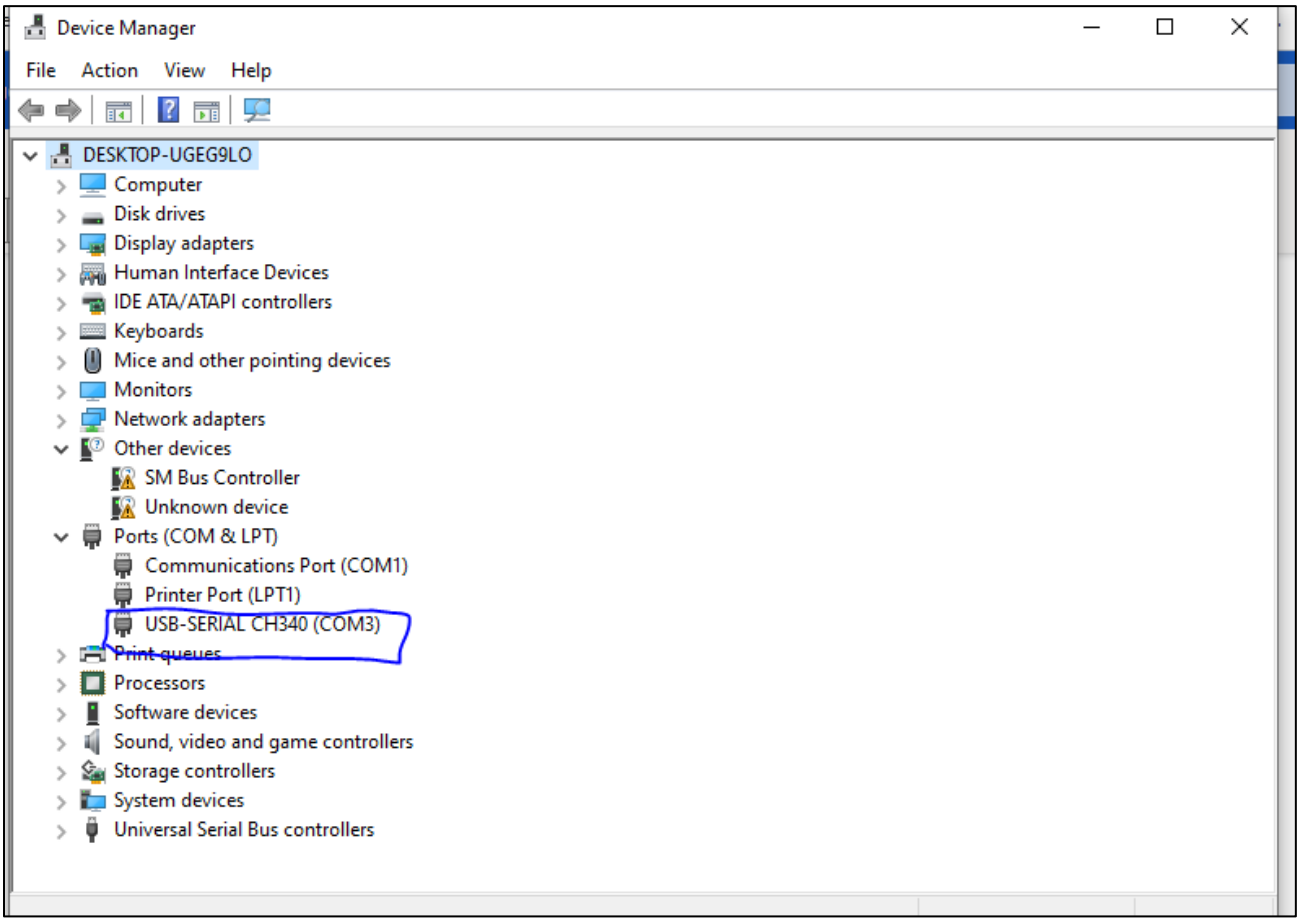
Step #5:

Type '**pip install –r requirements.txt**' in the command line and then press enter



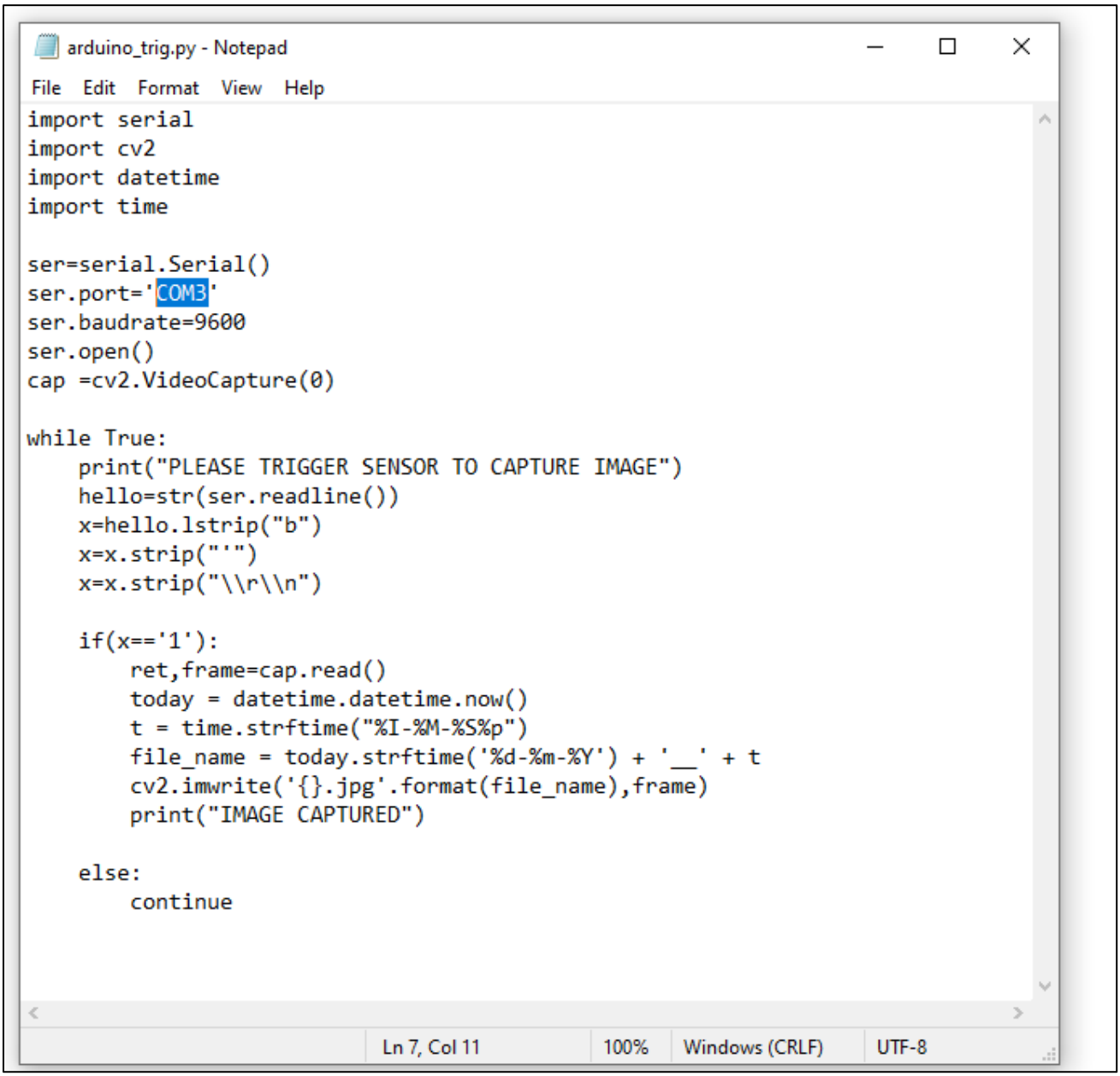
Step # 6:

Open Device Manager and go to the options Ports to find the relevant port on which your IR sensor module is connected. It should show **USB-SERIAL (CH340).**



Step #7:

Open **arduino_trig.py** python file in notepad and type the relevant port name. In this case the port is **COM3**



Step #8:

Open command line, type **python arduino_trig.py** and then press enter. The python script will start and at every trigger of the sensor, the image will be captured from the webcam and saved inside the current folder with current date and time.