Arduino/Python Serial Communication

# Section 1) Setting Up Python Environment

1. We first want to determine if Python is added to our PATH variables.
   1. In the CMD Window, type **echo %PATH%** and hit enter. These give a listing of your system’s path variables. Look for a line that says**C:\Python39\Scripts** or something similar.

Text

Description automatically generated with medium confidence

* 1. If you do not find such a path, [this video](https://www.youtube.com/watch?v=Pf-cGzOQmXU) gives a concise explanation on how to fix your system setting.

1. Next, we want to install the required library, known as Pyserial.
   1. Open up the CMD Window
   2. Text

      Description automatically generatedType **pip install pyserial** – you will receive an output informing you that the download and installation has started, all contained within the CMD window

# Section 2) Assembling the Test Circuit

1. Connect the ground pin of the Arduino to the ground rail of the breadboard
2. Lead a wire from this rail to the negative (shorter) end of the LED
3. Connect a 220 Ohm resistor to the positive end of the LED
4. Lead this resistor to the positive rail of the breadboard
5. Connect Pin 7 of the Arduino to the positive rail of the breadboard

Diagram

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# Section 3) Initializing Arduino For Communication

1. Open up the Arduino IDE and load the included test file.

Graphical user interface, text, application

Description automatically generatedMake note of the COM port which the Arduino uses. Head to **Tools > Port**. This will be important for writing the Python code.

My board is communicating using Port 5.

1. Upload the code to the Arduino.
2. Go to **Tools > Serial Monitor** and type 1 or 0. You should see the LED respond to your inputs.

# Section 4) Writing a Python Script

1. Open up your Python IDLE and copy/paste the test code into the file
2. Graphical user interface, text, application

   Description automatically generatedMake sure to change the COM port to the one we found earlier

# Section 5) Running the Python Script

1. Make sure the code has been uploaded to the Arduino and close the Arduino IDE.
2. Hit run (F5) on the Python IDLE. You should see another shell command window pop up with the text “*Type on / off / quit :*”. It may take a few moments to initialize.
3. Type on to turn the LED on.