CS 112 Lab #1

Intro & Set up

Welcome to our lab!

Purpose of this course is to learn basic programming principles

We will do so by learning Python

Purpose of Lab

Exercises

Coding exercises. These are submitted sometime after lab

Quizzes

Pencil/paper questions. Towards the half end of the lab on a given day

Tasks

Coding exercises. Need to be submitted during lab time – no exceptions

You need to attend lab in order to get any credit!

GTA: Hamza Mughal

CS M.S. Student

Attended GMU as an undergraduate and graduated with a B.S. in CS in 2018

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Website – www.hamzamughal.com

Office hours – Tuesday & Thursday. Room TBD

- Option 1: 10:30-11:25 am & 1:30-2:30 pm
- Option 2: 1:30-3:30 pm

Where are things?

piazza – www.piazza.com

files, schedule, announcements, discussions

blackboard – mymason.gmu.edu

only for submitting projects, viewing grades

slides – www.hamzamughal.com/slides

ppt slides downloadable/viewable here

how to get an A

do all readings on time (before class)

attend all lectures/labs, participate

try assignments early enough to ask questions.

always turn in 100% working code

go to office hours / piazza regularly with questions

study early and well for tests

how to get a B

do pretty much all readings

only miss a couple meetings, catch up on what you missed

start assignments earlier than a few days before deadline; get programs all working

occasionally go to office hours / piazza as needed

study quite hard just before tests

how to get a C

only miss a couple meetings, but get distracted by the internet, shiny things, etc

do some readings, but not before class

try hard on work, but a bit late or in one 'power session'

"I don't have time for office hours" (or, "I'll start at office hours and try to do all my learning there")

office hours are to help you get unstuck, not to help you through the entire assignment. If you just bounce between all office hours to try to start/finish a project, you're punishing yourself and everyone else!

how to Fail

decide the first few lectures/labs were easy, and skip some/all

skip the reading because it's not worth much of your grade/time

start assignments too late to ever get clarifications/questions answered

cram for tests the night before, if at all

Considering this is a summer semester that goes 2x as fast compared to a regular semester…

grading questions?

Always contact the actual grader (me for labs/projects; professor Neary for tests).

You have one week from the grade's posting to make any grading requests. **This is not an end-of-semester strategy**

Honor Code Policy

Programming projects are considered individual efforts, therefore no sharing of code and/or discussion of problem solutions are allowed with anyone except the TAs or the professor.

It is very easy to find out if you have copy pasted code from the internet

Variety of tools developed by computer scientists available to detect this…

You may not use any Internet resources to create code or algorithms, besides the textbooks, the slides, and Piazza, unless otherwise specified.

However, you are free to look up the syntax errors your encounter online, to gain an understanding of what the syntax error means

https://cs.gmu.edu/resources/honor-code/


DID YOU CHEAT?
YES
WHAT DID IT COST?
FAILING THE COURSE
imgflip.com

The Big Picture

computers are extremely obedient

we learn how to describe a series of commands

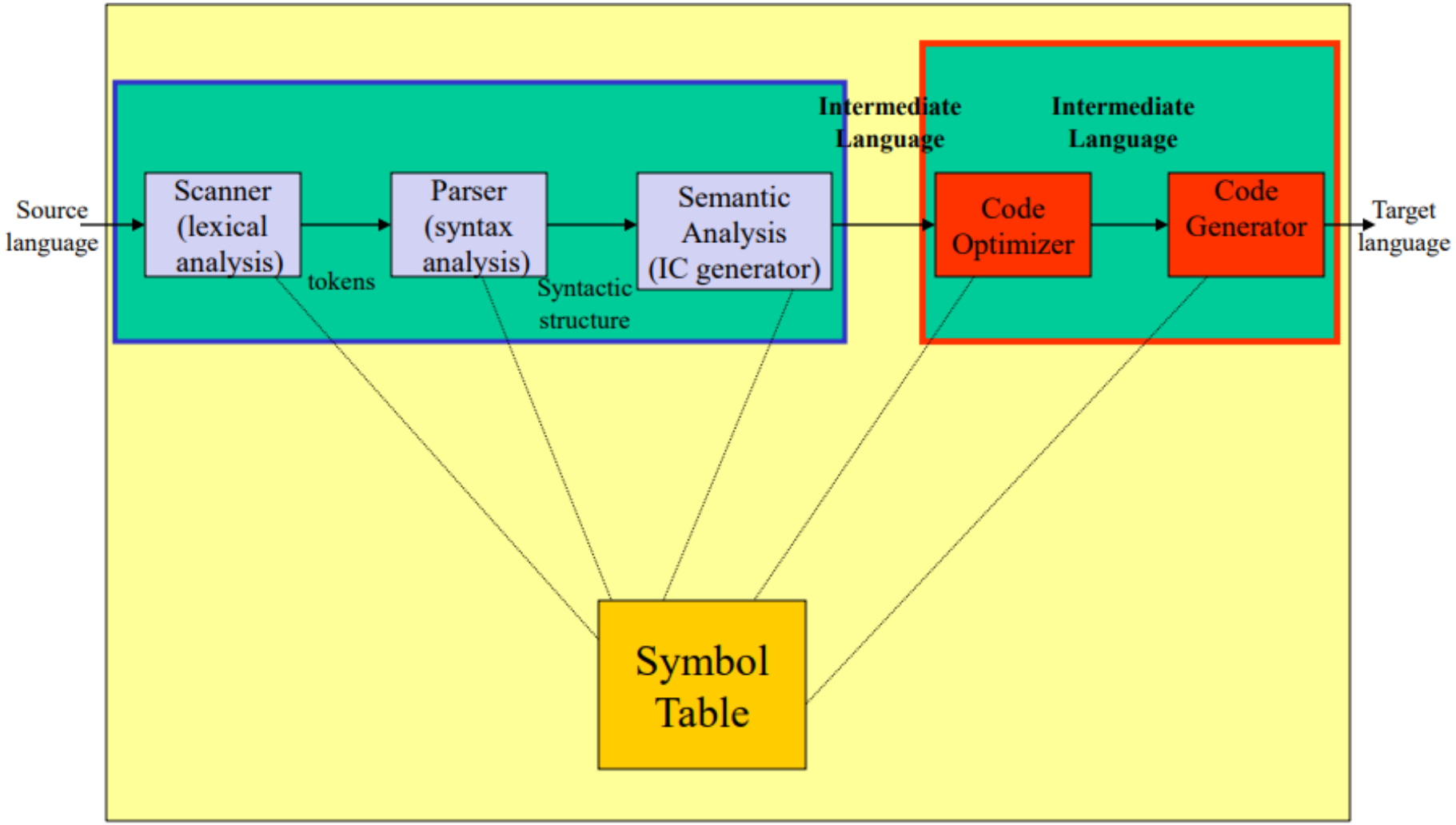
Each programming language is a different way to express these commands. We happen to use Python in this class.

writing a program means to write these commands into a plain old text file.

running a program means to have the computer perform those commands – calculating, printing things, asking user for input, and so on.

Computer Science ≠ Programming!

Computer Languages



```
swap(int v[], int k)
{int temp;
   temp = v[k];
   v[k] = v[k+1];
   v[k+1] = temp;
}
```

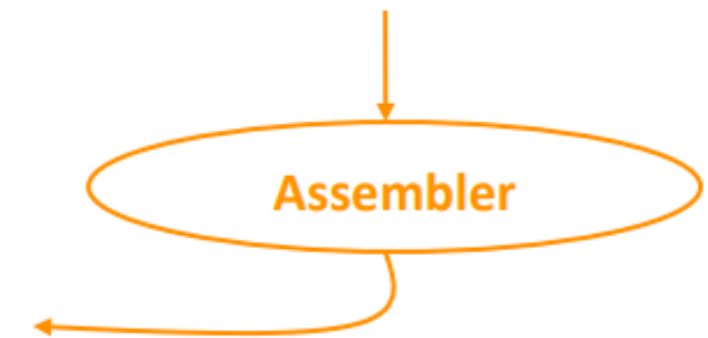
High-level language program
(in C)


```
swap:
      muli $2, $5,4
      add  $2, $4,$2
      lw   $15, 0($2)
      lw   $16, 4($2)
      sw   $16, 0($2)
      sw   $15, 4($2)
      jr   $31
```

Assembly language program

```
0 0 0 0 0 0 0 0 1 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 1 1 0 0 0
0 0 0 0 0 0 0 0 1 0 0 0 1 1 1 0 0 0 1 1 0 0 0 0 1 0 0 0 1
1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1 0 0 0 1 1 0 0 1 1 1 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0
1 0 1 0 1 1 0 0 1 1 1 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1 0 1 0 1 1 0 0 0 1 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0
0 0 0 0 0 0 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
```

Binary machine language program



Install an IDE

An IDE (or Integrated Development Environment) is a program dedicated to software development.

Multiple IDEs to choose from

- Sublime, Atom, Vim, Notepad++, …

My recommendation is downloading **Notepad++** for this course

home
download

- v7.7 - Current Version
- v7.6.6
- v7.6.4
- v7.6.3
- v7.6.2
- v7.6.1
- v7.6
- v7.5.9
- v7.5.8
- All versions

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Download Notepad++ 7.7

Release Date: 2019-05-19

Download 32-bit x86

- Notepad++ Installer 32-bit x86: Take this one if you have no idea which one you should take. GPG Signature
- Notepad++ zip package 32-bit x86: Don't want to use installer? Check this one (zip format). GPG Signature
- Notepad++ 7z package 32-bit x86: Don't want to use installer? 7z format. GPG Signature
- Notepad++ minimalist package 32-bit x86: No theme, no plugin, no updater, quick download and play directly. 7z format. GPG Signature

Download 64-bit x64

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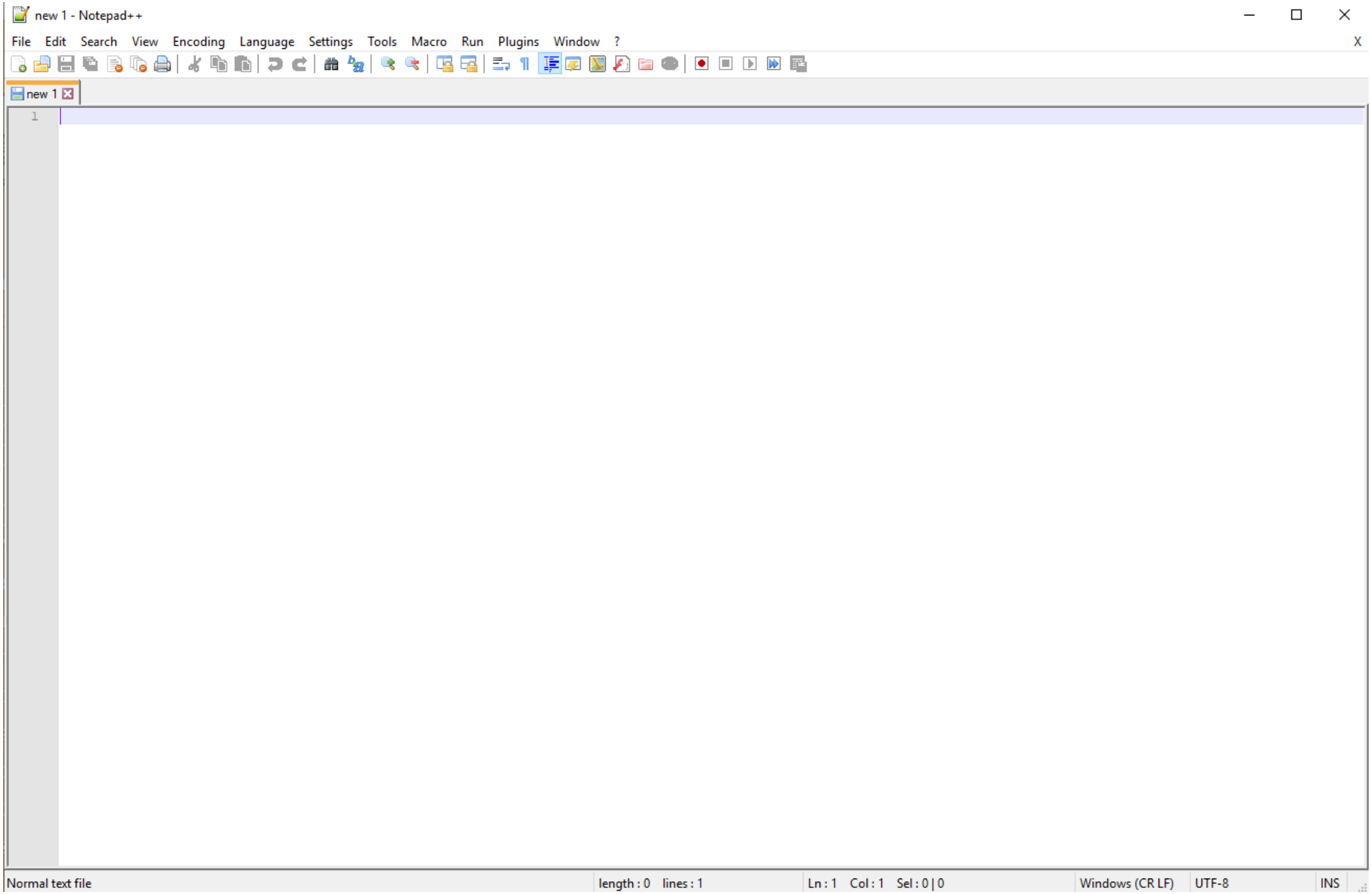
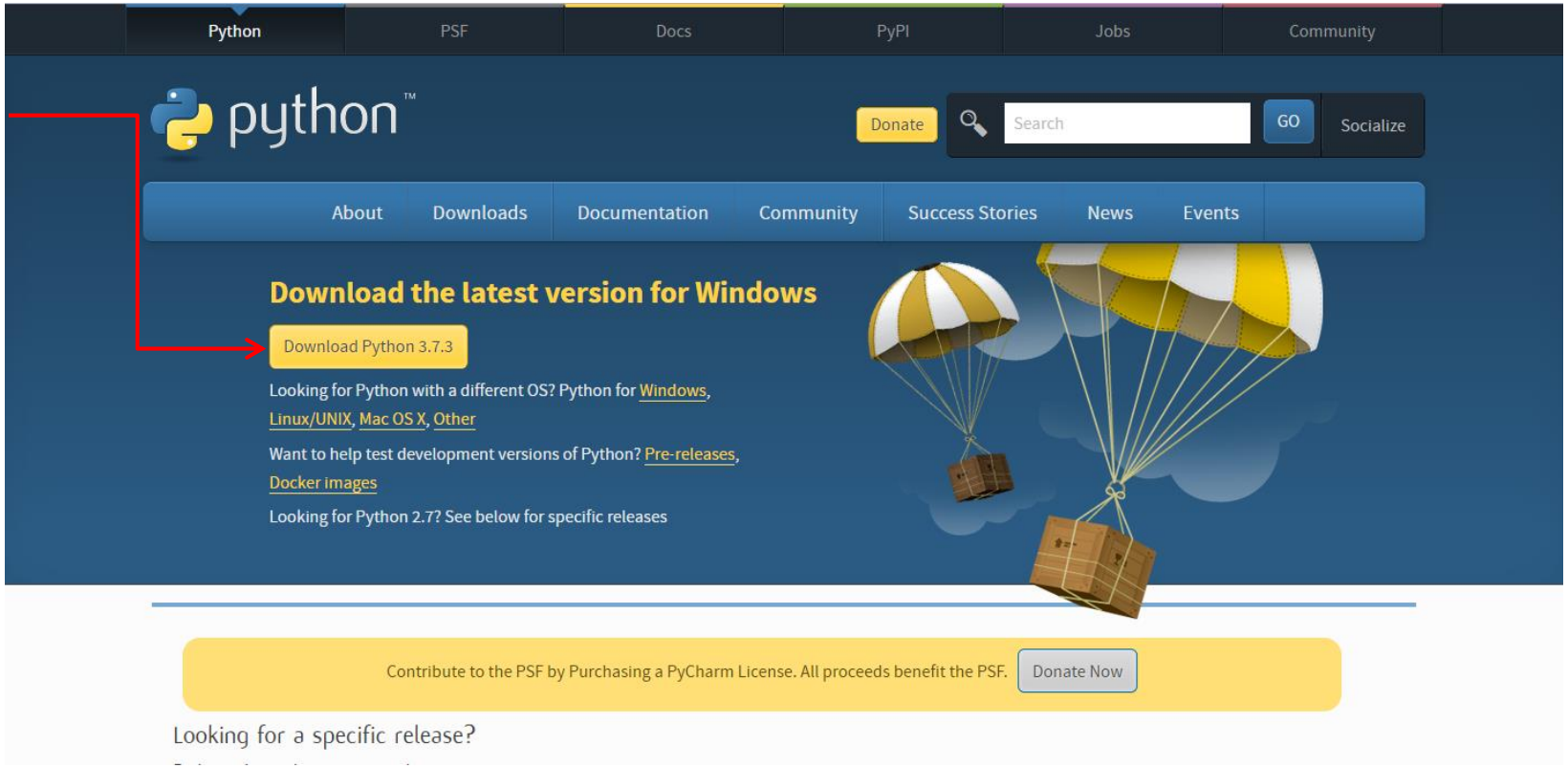
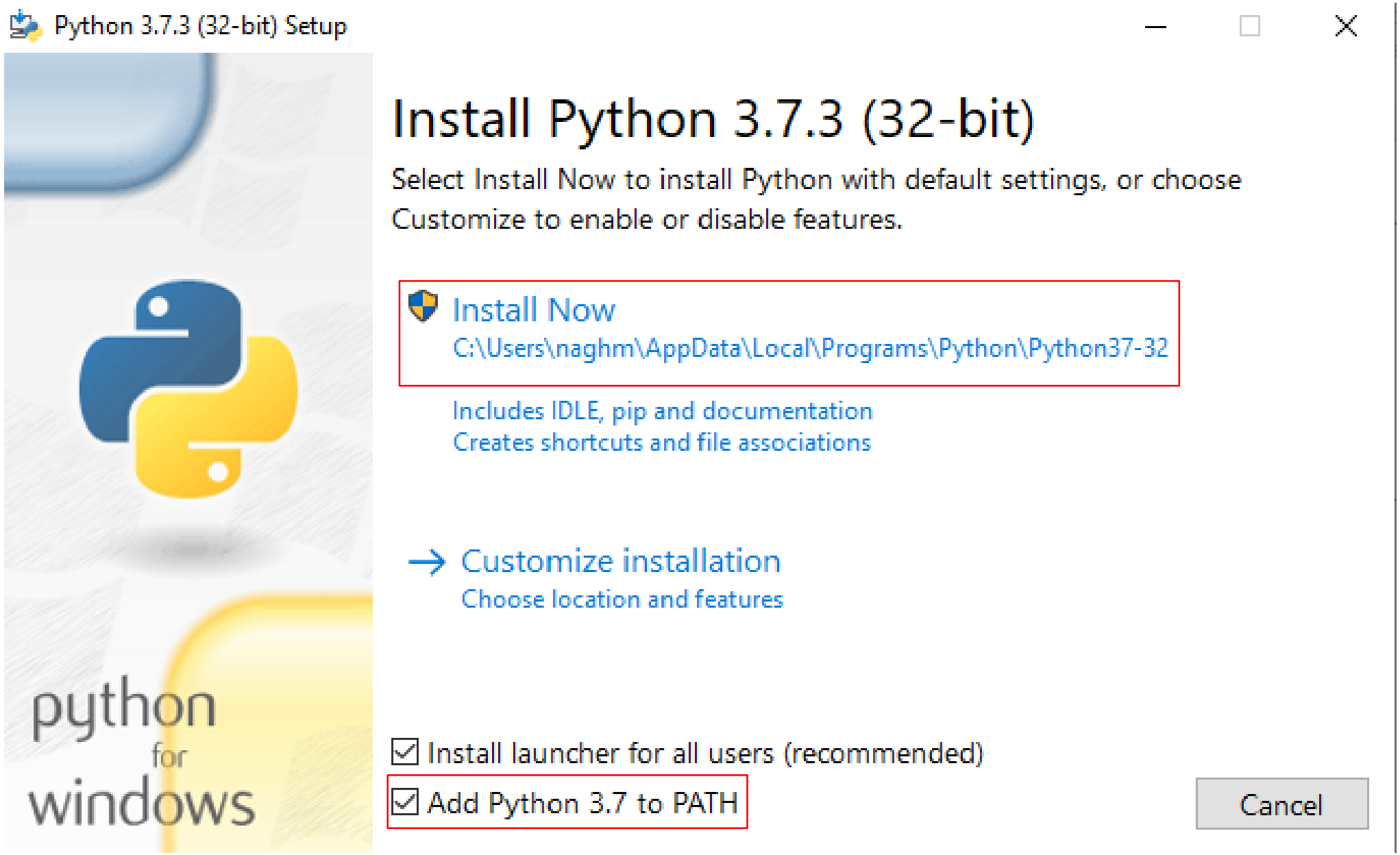

new 1 - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
new 1
1
Normal text file
length : 0 lines : 1
Ln : 1 Col : 1 Sel : 0 | 0
Windows (CR LF)
UTF-8
INS

Install Python on Your Machine

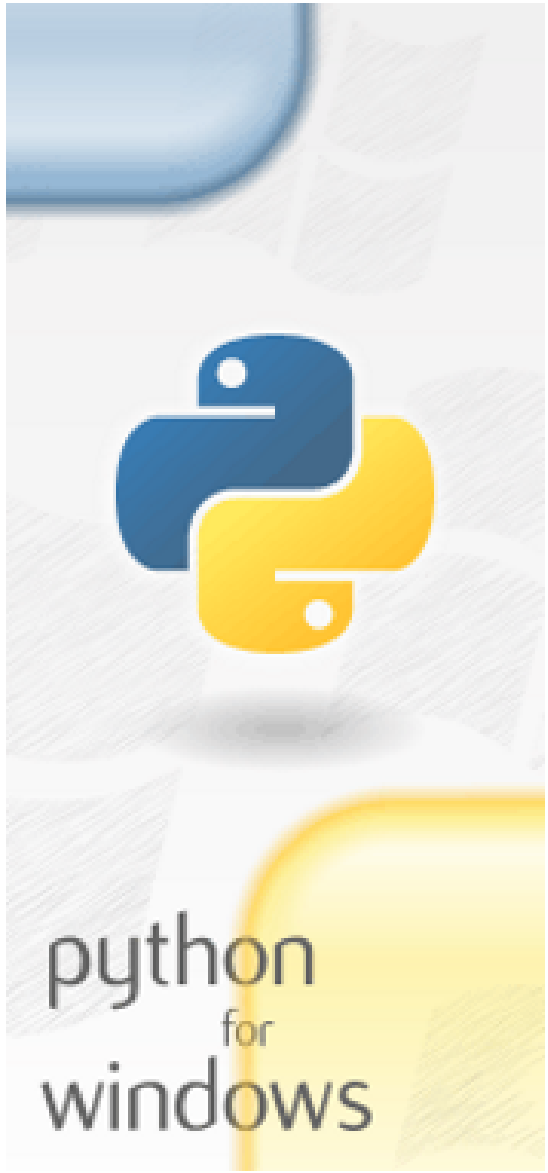
Google “install python” and click on the first link

https://www.python.org/downloads/




Python 3.7.3 (32-bit) Setup
Install Python 3.7.3 (32-bit)
Select Install Now to install Python with default settings, or choose
Customize to enable or disable features.
Install Now
C:\Users\naghm\AppData\Local\Programs\Python\Python37-32
Includes IDLE, pip and documentation
Creates shortcuts and file associations
Customize installation
Choose location and features
python
for
windows
Install launcher for all users (recommended)
Add Python 3.7 to PATH
Cancel

Python 3.7.3 (32-bit) Setup



Setup was successful

Special thanks to Mark Hammond, without whose years of freely shared Windows expertise, Python for Windows would still be Python for DOS.

New to Python? Start with the online tutorial and documentation.

See what's new in this release.

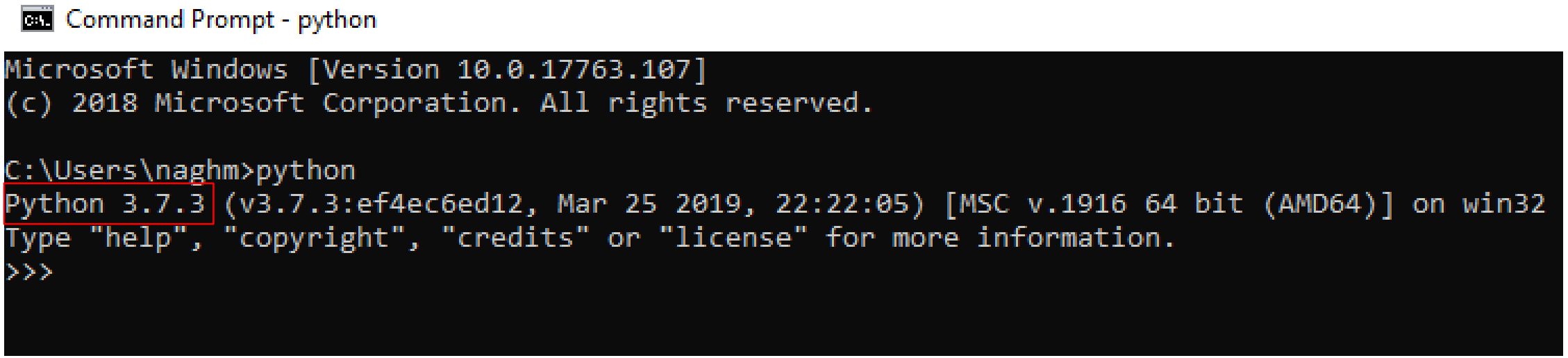
Close

If installation was successful…

Open command prompt

- Windows – type cmd in the search bar
- Mac – type terminal in spotlight

Once command prompt is open type python (python3 on Mac)



Play around in command prompt

Try a few basic things out in python in command prompt

- Basic arithmetic – 2+2, 5*3, 3-2, etc
- Print some things out using print(…)
- Create some variables – x = “Is this working?”

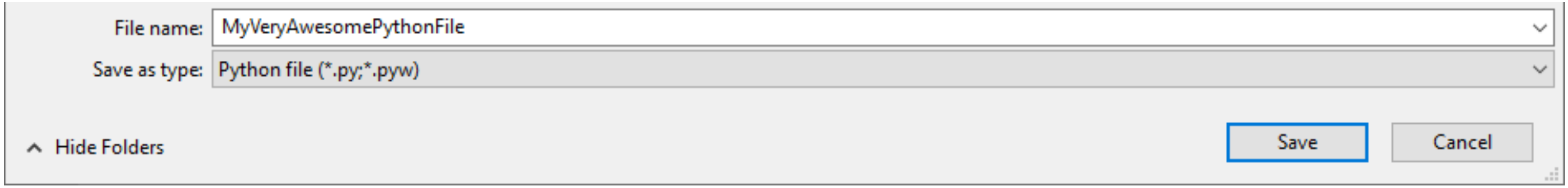
Running python via a .py file

Open up the IDE you just recently installed (preferably Notepad++ ☺)

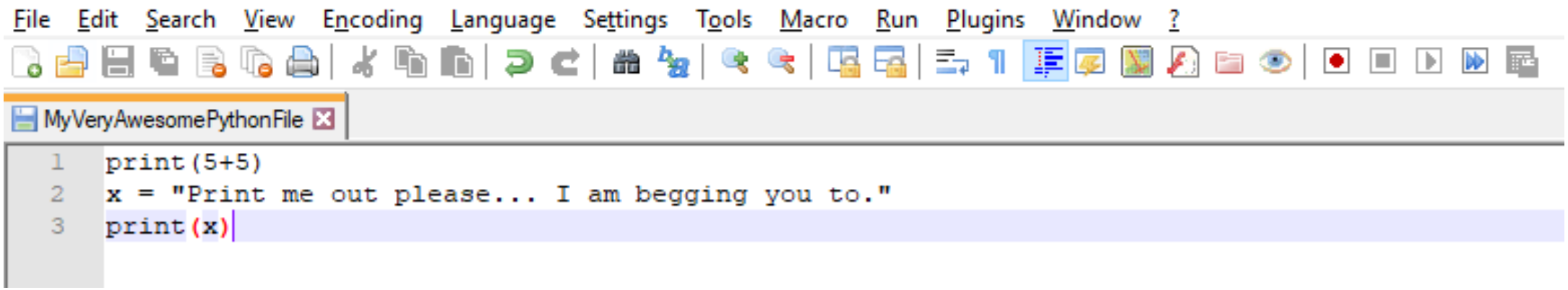
First save your file as a .py file – you may want to create a CS112 folder to store your files

Give your file any name for now

There are naming conventions that will need to be followed for turn ins



Now type what you typed in command prompt earlier into the .py file in Notepad++



Save your file afterwards and open up command prompt where your file is saved

Once command prompt is open, type python FileName to run your .py file

```
C:\Users\naghm\Desktop\CS112GTA>python MyVeryAwesomePythonFile
10
Print me out please... I am begging you to.
```

Lab 1

Objective is to submit a .py file with code that prints “Hello World”

Make sure you run your .py file and verify it prints “Hello World”

Submission is on blackboard

Follow the file naming convention specified

userID_2XX_LX.py

first with your user ID, then an underscore, then your lab section number (2B1 or 2B2), then an underscore, then the letter describing what sort of assignment this is (P for project, L for lab) and the number of the item, and then .py as the extension