



Chapter 02 Pre-tasks.

Part A. Install Python 3 on Windows 10 & Part B. Install and customize Notepad++ for Python basics for Engineers



Before reading chapter 2, please download and install the latest Python 3 on your PC or laptop. The Python version used in this installation instruction is 3.8.2 but any later python 3 versions can be installed in the same manner and most of the functions will be the same or similar.

Part A. Install Python 3 on Windows 10

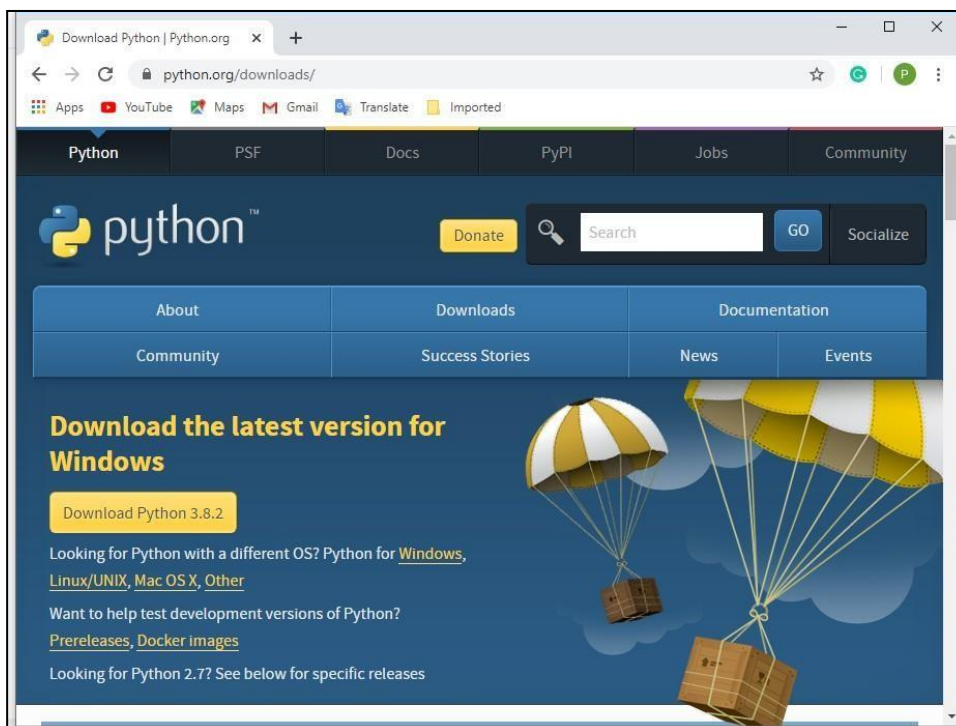
On a Microsoft Windows Operating System (OS) based PC, Python is not a pre-installed software, so, just like Minecraft and Adobe PDF reader, you can download the latest copy of Python installation .exe file and install it on your PC. To learn Python from your Windows PC, you will first need to install Python. Based on the Author's own experience, this section will guide on how to install the latest Python 3 on Windows PC for your best advantage and then guide you through to the installation and customization of a Windows Text Editor, Notepad++.

On computers with Apple's macOS or Linux OS, Python is out-of-box software, however, if you do not update your computer's Operating regularly then the pre-installed Python is likely to be 2.7.x or below or an early version of Python 3.x. Here, you are recommended to download **the latest Python 3.7.x or higher** and install it on your computer to follow the content of this book. If you are a Linux or macOS user, this book assumes you know your way around your Operating System; hence you are already running the latest Python 3 version on your Linux or macOS PC.

Now let's download and install the latest Python on your Windows PC!

- ① Go to the official Python website and download the latest version of Python to suit your Operating System. If you are using 64 bit Windows, please navigate to Windows version list and download 64-bit version of the latest Python. The one shown on the first page of Python.org is usually a 32 bit Python version. 64 bit Windows installable file name should be like "python-3.8.2-amd64.exe".

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

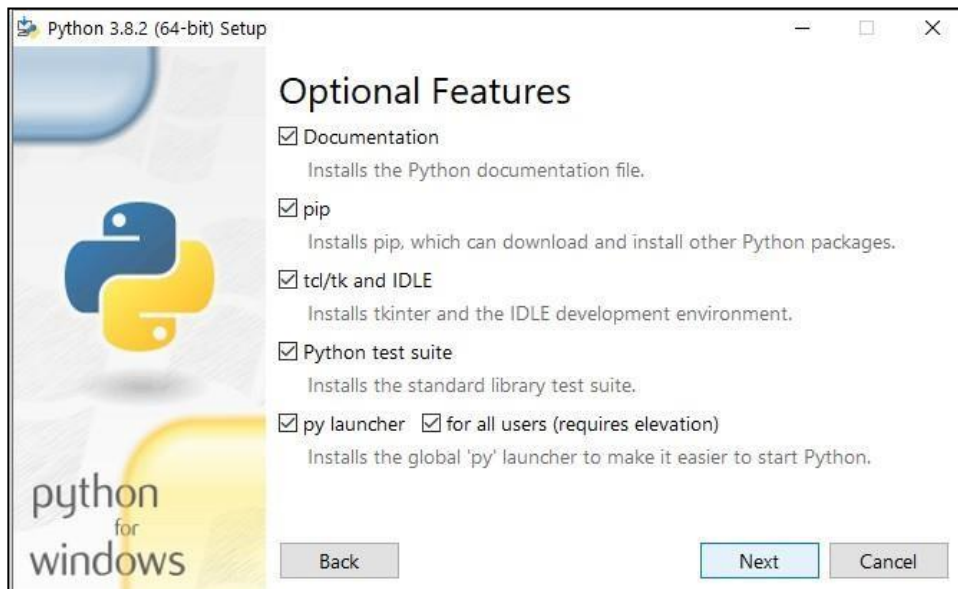


- ②
- a) Go to your Download folder and double click on **python-3.8.2-amd64.exe** file to start your installation.
 - b) Check **Add Python 3.8 to PATH**.
 - c) Select **Customize installation** option.

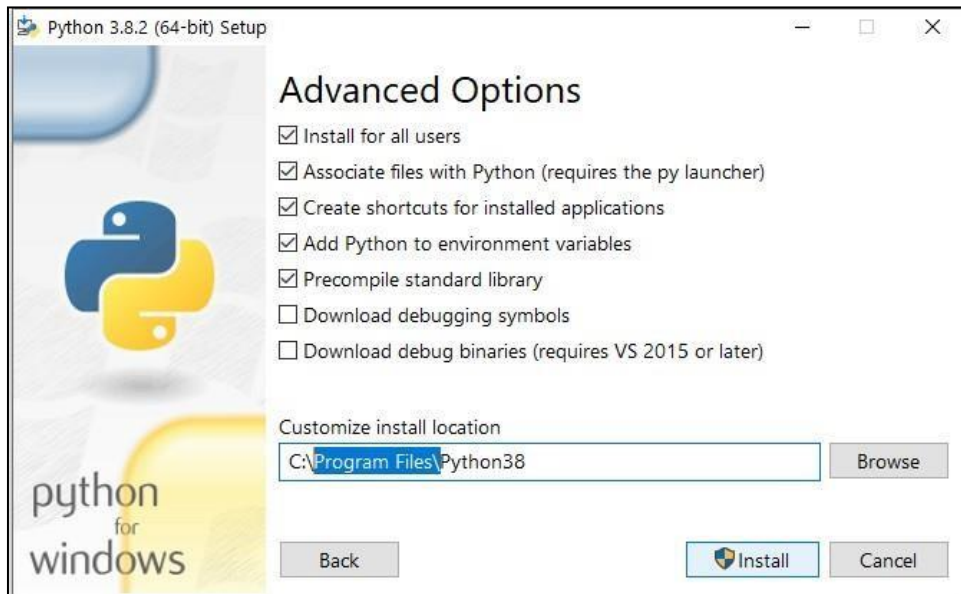


Add Python 3.8 to PATH option will add a path to your PC's **System Properties > Environment Variables > System variables > Path** option. This will allow you to run your python code from any location on your PC.

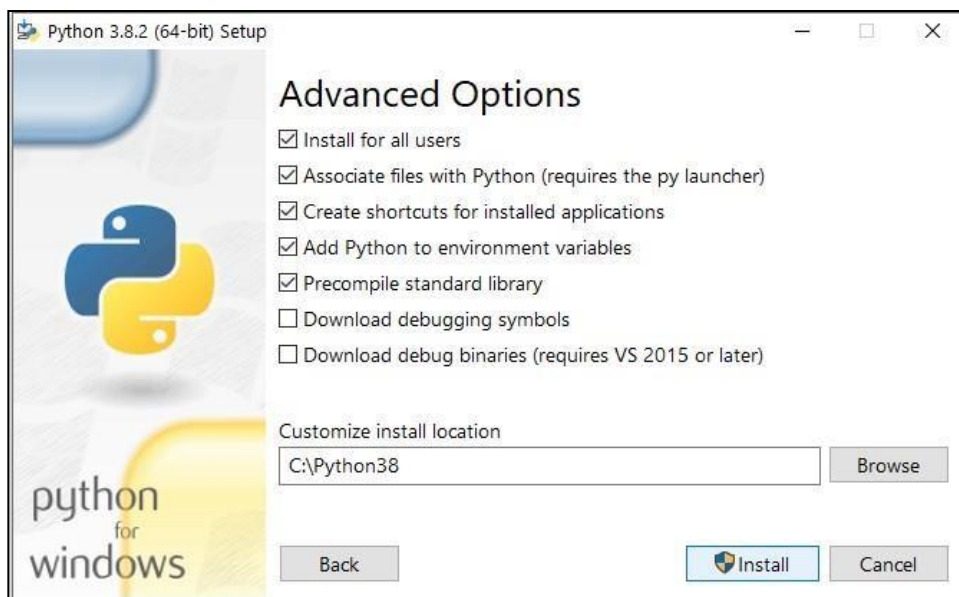
- ③
- Leave **Optional Features** as default (all checked) and select the **[Next]** button.



- ④ Check **Install for all users** on advanced options. This will change the **Customize install location** option as below. To avoid Windows security policy hassles, you need to change the installation location and install the Python under **C:\Python38** folder.

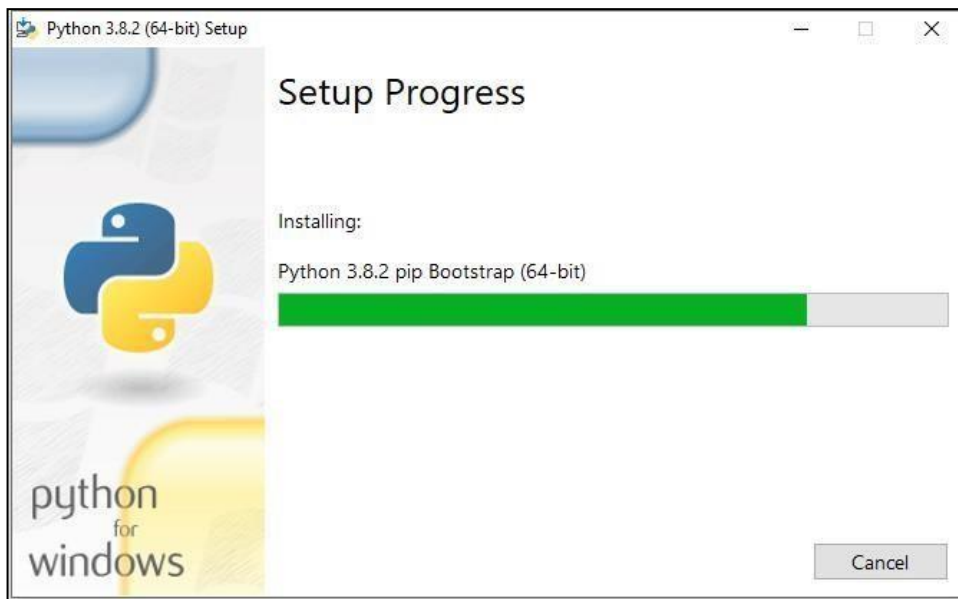


Delete 'Program Files\' first. When your installation folder name looks like the following screenshot below, then select the [**Install**] button to begin Python 3 installation.



If you are using another Python version 3, simply change the last digit(s) to reflect the correct information. E.g.) For Python 3.7.4, rename your folder to 'C:\Python37' or 'C:\Python374'.

- ⑤ Wait until Python installation completes on your Windows PC.



Once '**Setup was successful**' message window appears, click on [**Close**] button to exit the Python installation wizard.

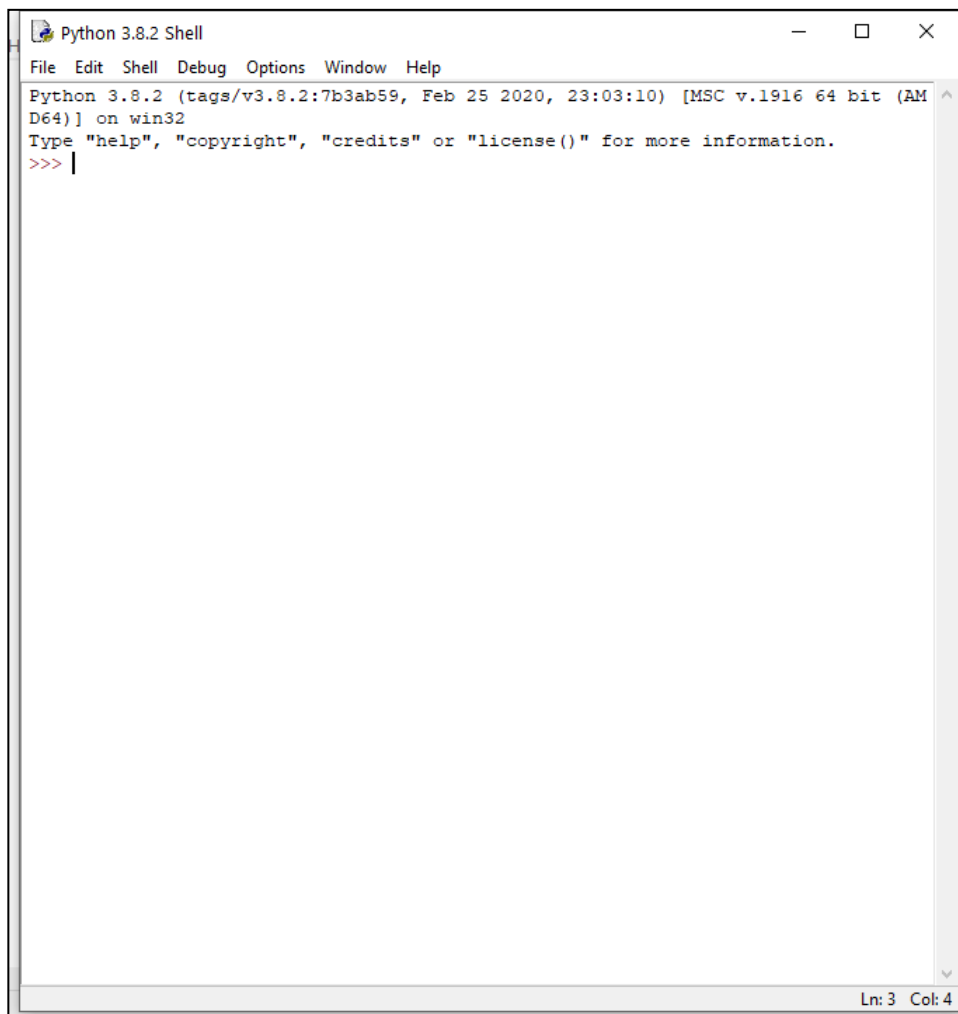


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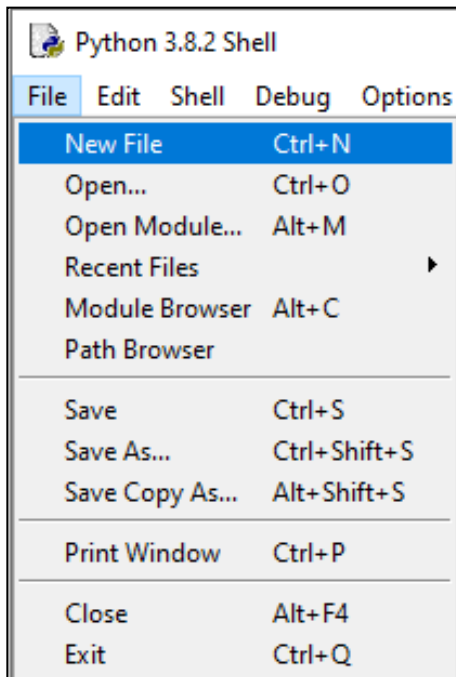
- ⑥ From your Windows, select the **Windows icon** on the left corner of your screen, then go to the **'P'** section of your programs and open **'Python 3.8 New'** program folder. Select **'IDLE (Python 3.8 64-bit)'** to learn Python basics.



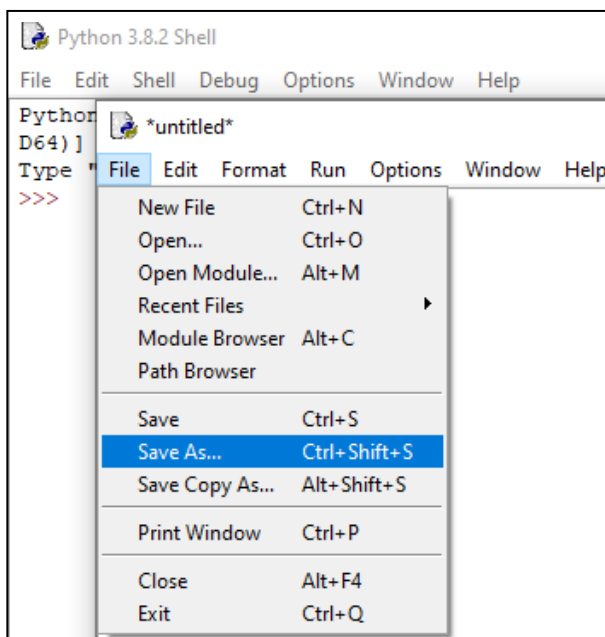
- ⑦ If all installation went smoothly, you will be prompted with the following Python Shell prompt as shown below.



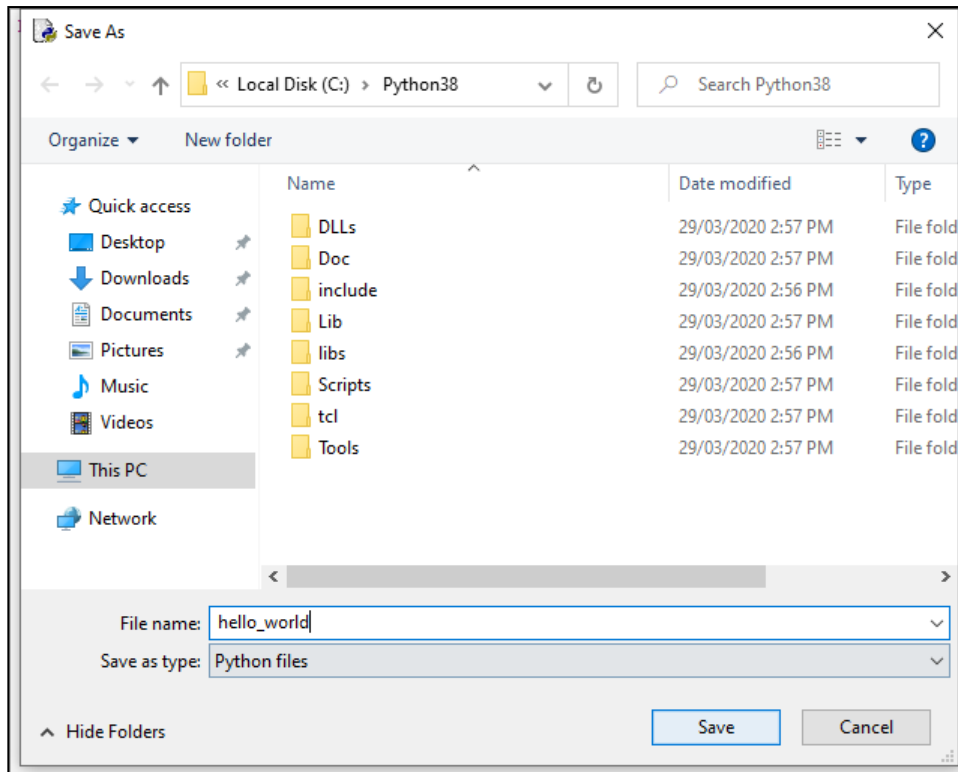
- ⑧ If you want to write your codes in Python Default Text Editor and save it to as a file, go to [**File**] > [**New File**]. This will open up a new file for you to work on.



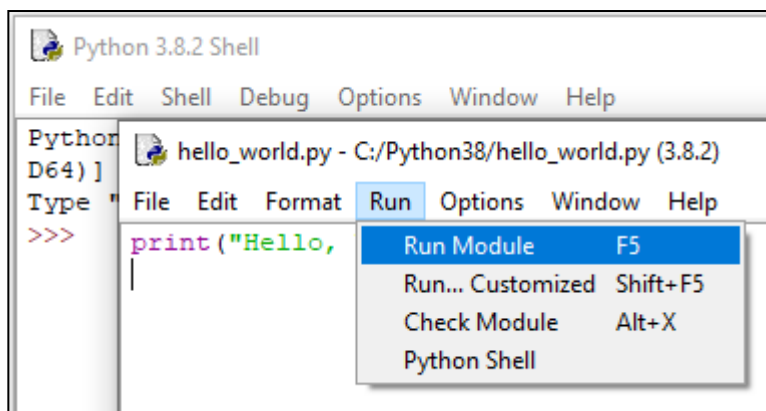
- ⑨ Once you have completed writing your code. You can go to [**File**] > [**Save As...**] to save the file as a .py, Python script.



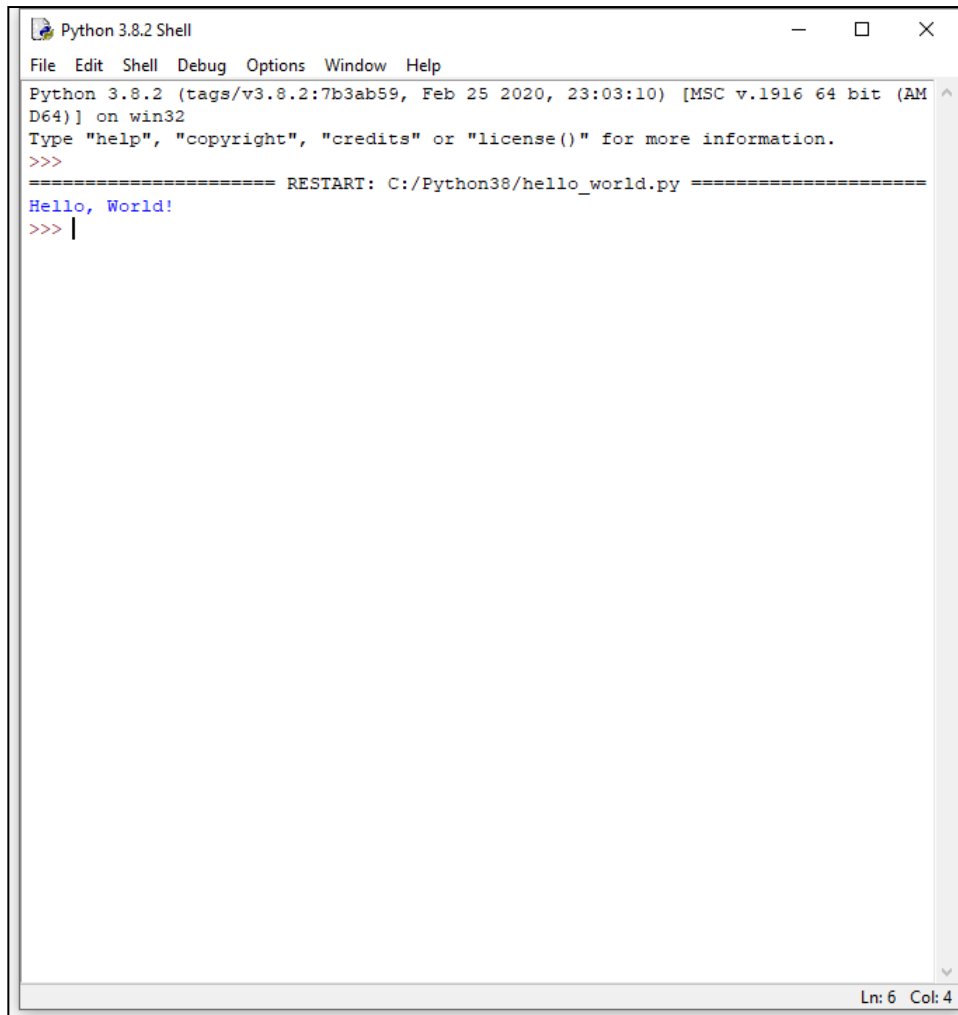
- ⑩ Give your Python code a meaningful name and save it to preferred location. The example is showing the default file saving location for Windows.



- ⑪ Once you saved the Python code as a .py file, now you can use the [**Run**] > [**Run Module F5**] option to run your code.



- ⑫ As shown in the following output, when you run the script, it will run in Python Shell and display the result.



```
Python 3.8.2 Shell
File Edit Shell Debug Options Window Help
Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb 25 2020, 23:03:10) [MSC v.1916 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/Python38/hello_world.py =====
Hello, World!
>>> |
```



"Python interpreter is now waiting for your input. You can interact with Python!"

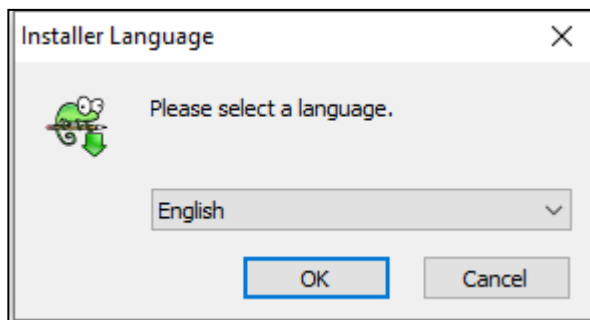
Part B. Install and customize Notepad++ for Python basics

B-1. Notepad++ download and installation

Note: In this example, Notepad++ 7.8.5 is used but try to download the latest version and everything should work the same way. If you want to follow the content down to the wire, you can download the same version and this should be OK too.

Download URL: <https://notepad-plus-plus.org/downloads/>

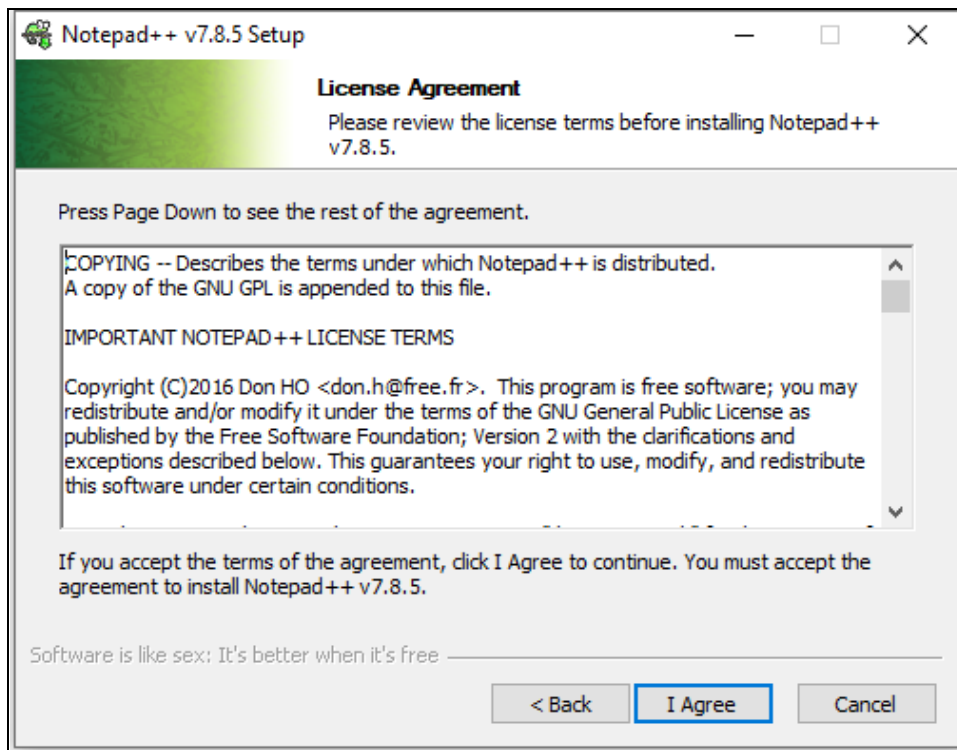
- ① After downloading the latest Notepad++, go to your download folder and double click on .exe file to begin your installation. The first installation window is Language selection window as shown below:



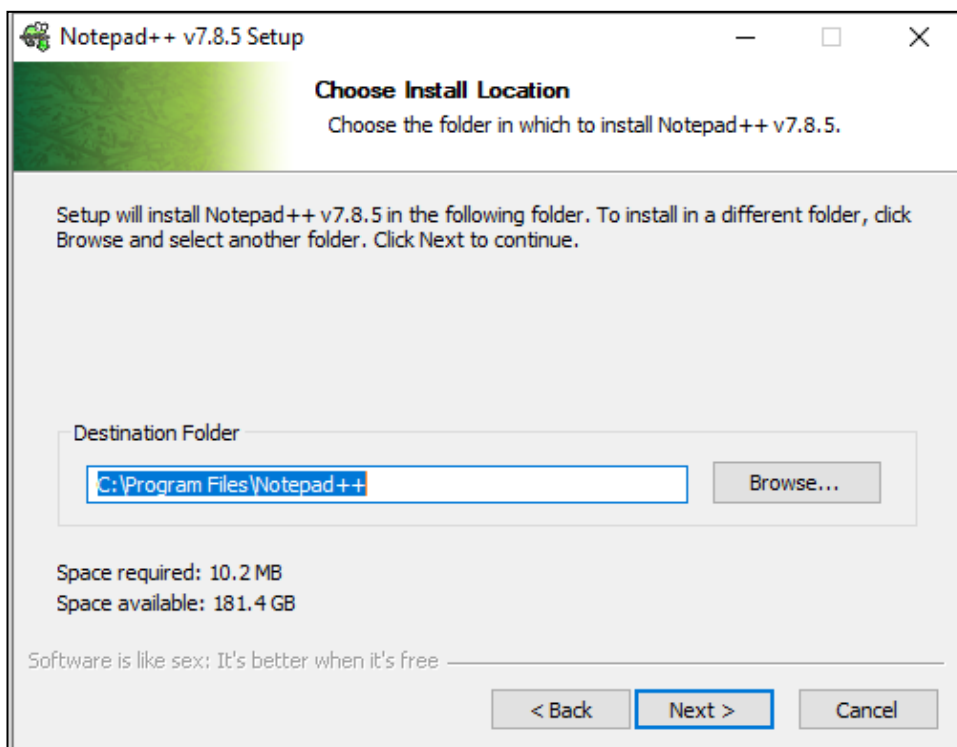
- ② Click on [Next] button.



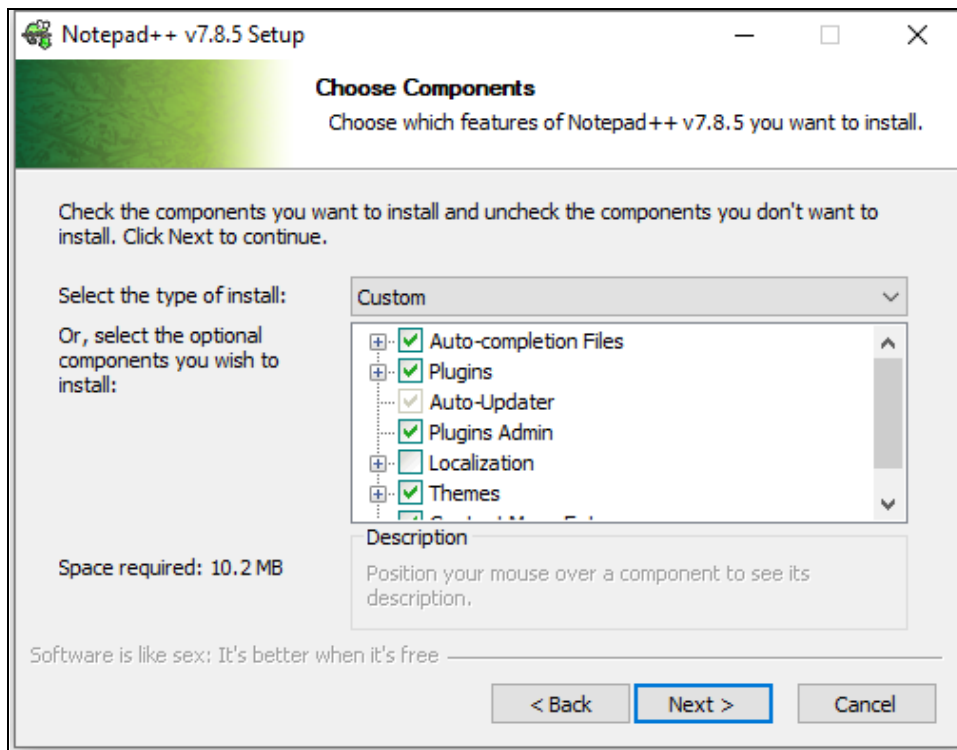
- ③ Click on [**I Agree**] button.



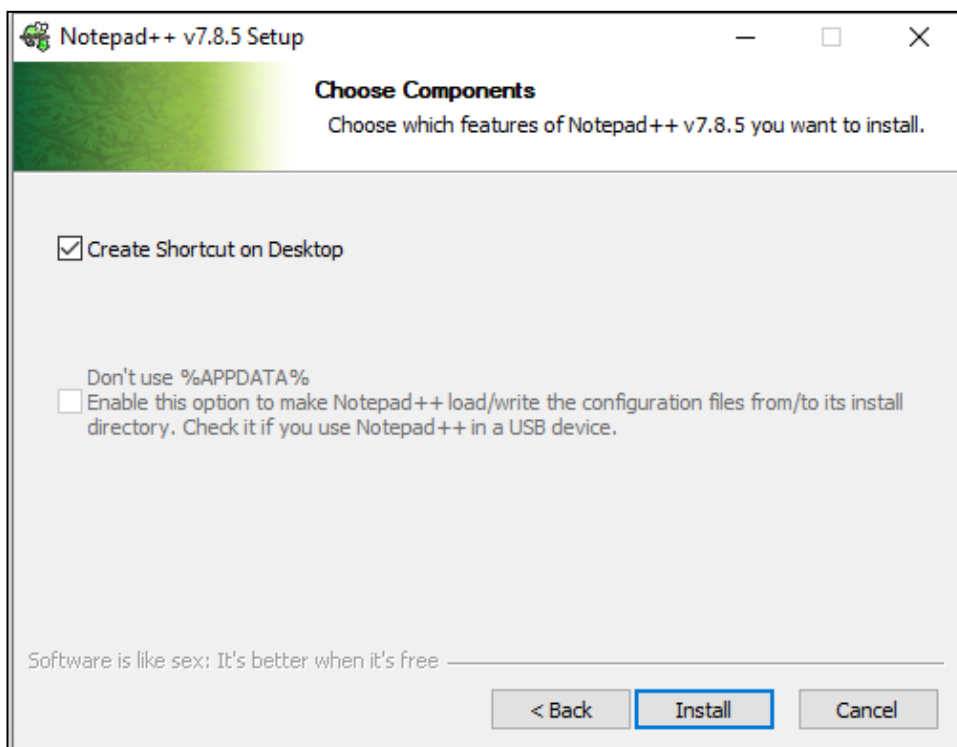
- ④ Click on [**Next**] button.



- ⑤ Click on [Next] button.



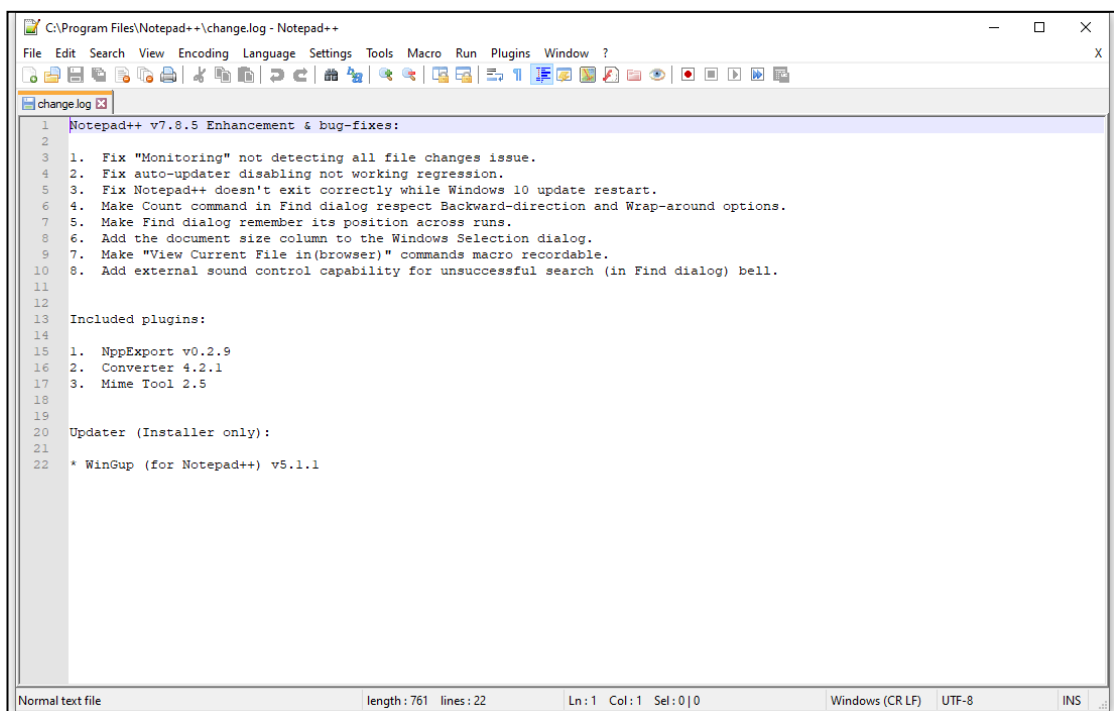
- ⑥ Click on [Install] button.



- ⑦ Click on **[Finish]** button.

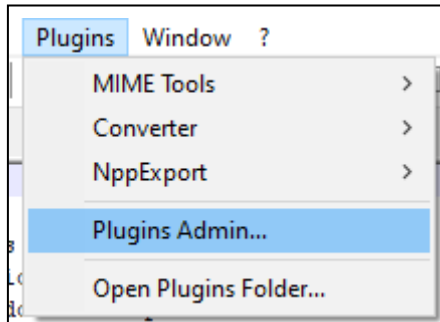


- ⑧ You have successfully installed Notepad++ on your PC now.

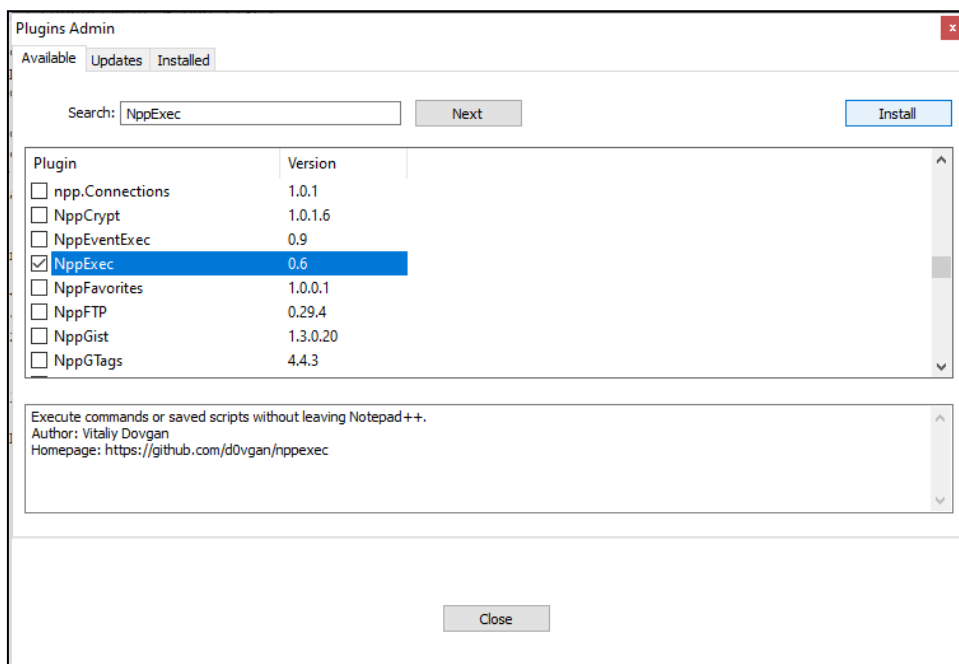


B-2. Notepad++ customization for Python study

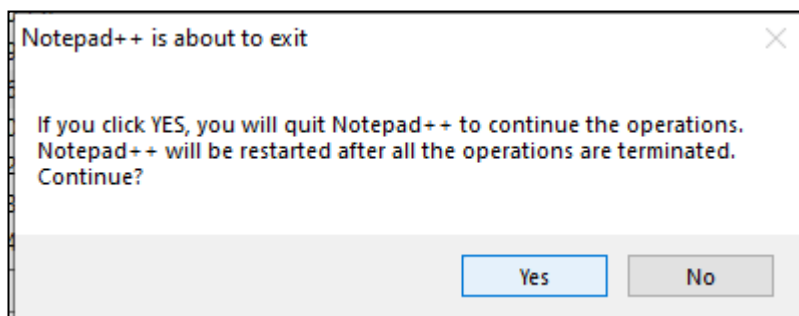
- ① First, go to [Plugins] > [Plugins Admin...].



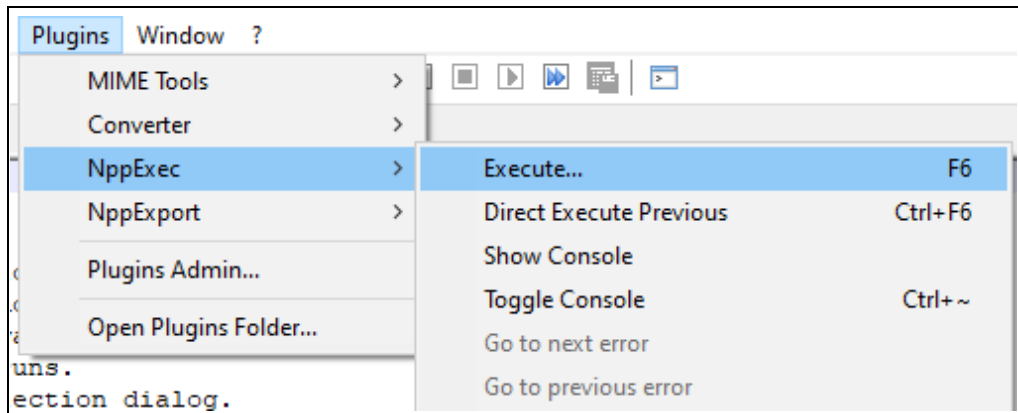
- ② Then in the Search bar, type in 'NppExec' and click on [Next] button. Locate NppExec module and click on [Install] button.



- ③ Click on [Yes] button.

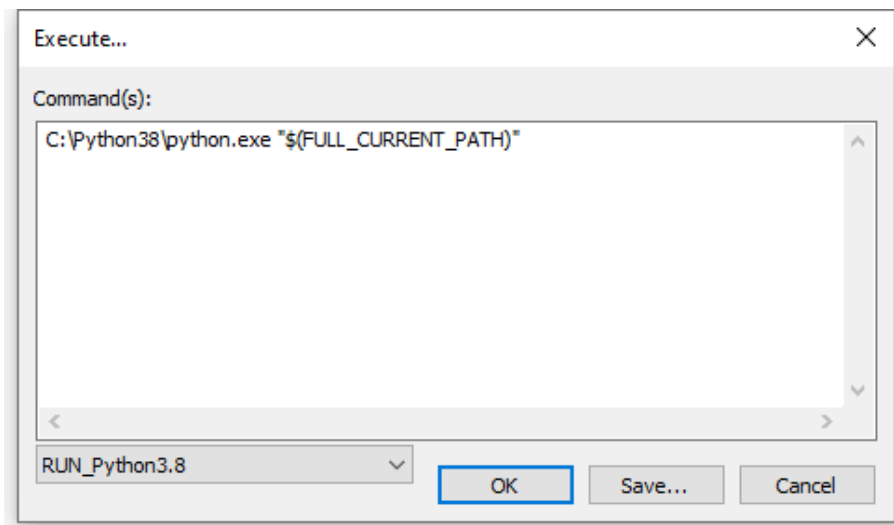


- ④ Now go to [Plugins] > [NppExec] > [Execute... F6].

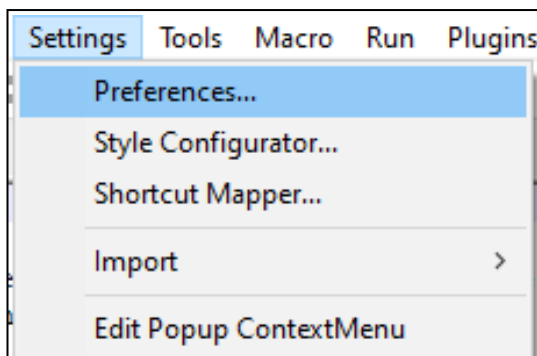


- ⑤ Type in the command shown below and click on [Save] button, then give a script name as 'RUN_Python3.8'. Then click on [OK] button.

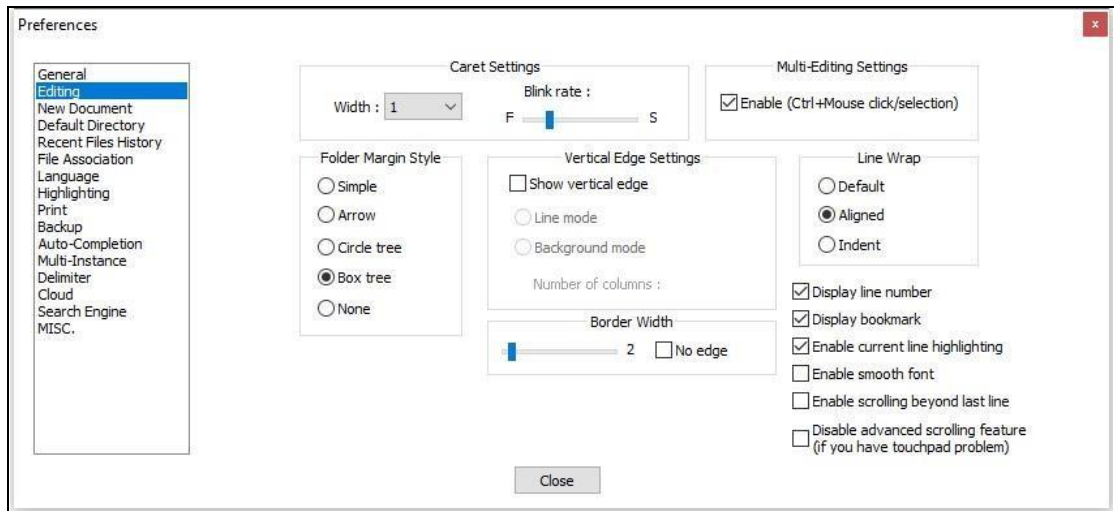
C:\Python38\python.exe "\${FULL_CURRENT_PATH}"



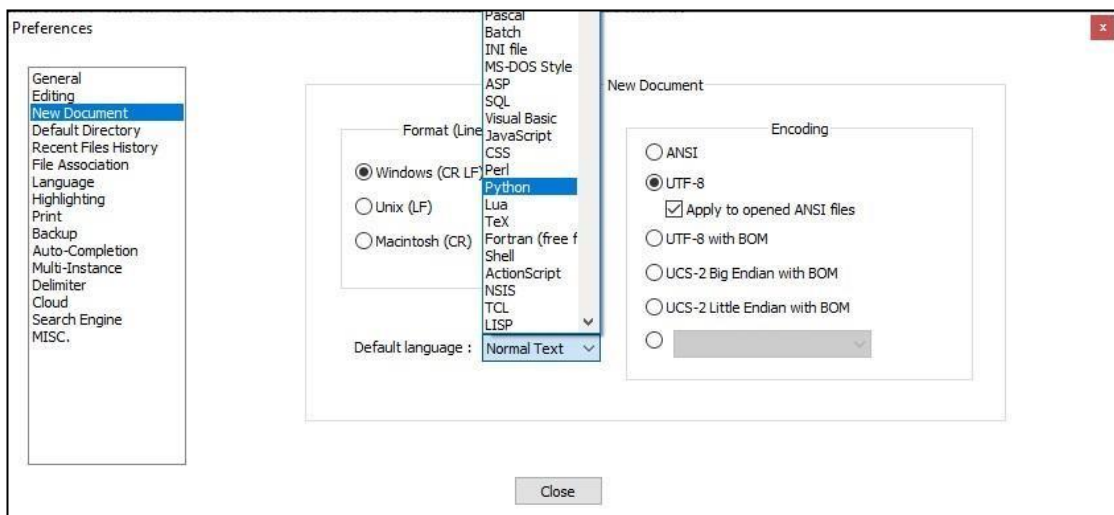
- ⑥ Move to [Settings] > [Preferences...].



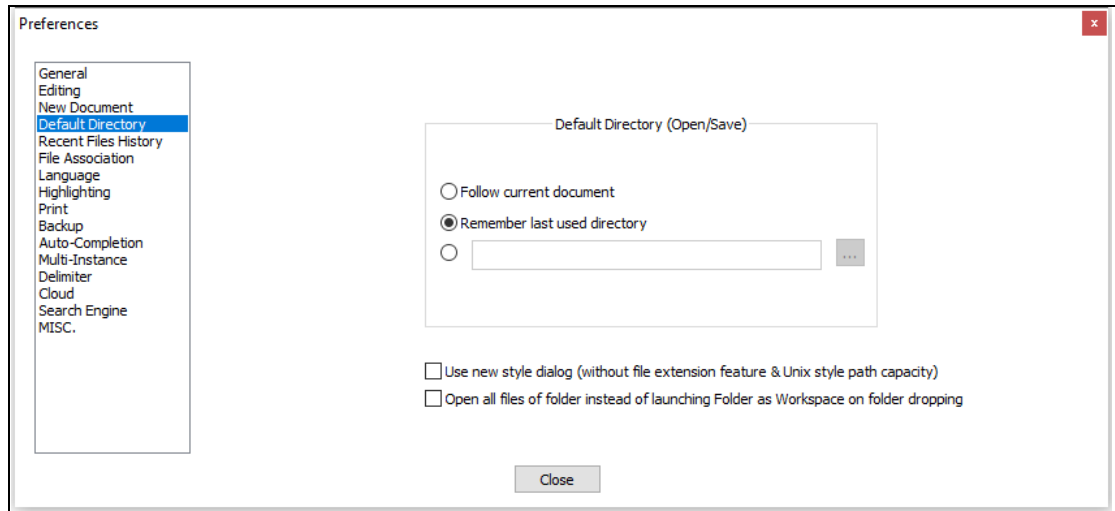
- ⑦ Under **Editing** option, check **Multi-Editing Settings to enable** changes to multiple selections at once. Multi-Editing option is a very handy option allows you to change multiple items with the same name or variable name.



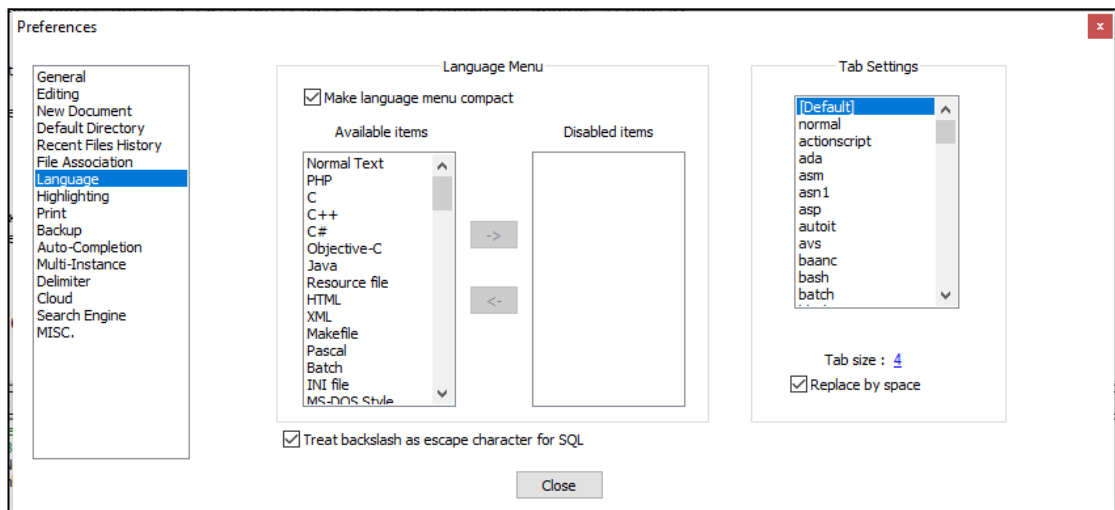
- ⑧ Under **New Document** option, choose Python as the Default language for Notepad++. Also make note that the Encoding method used in **UTF-8** format as shown, this is the default settings, anyway. This option will allow the new documents to recognize as Python codes with the default encoding of UTF-8.



- ⑨ Under **Default Directory**, select **Remember last used directory**. This will allow you to open in the last directory you have been working in and can save you time. Also, optionally, you can choose your own default directory.
- Also, make sure you **uncheck Use New style dialog** option **off**, so the files will be saved as .py file by default. This will save you time to click through to find the correct file extension type.

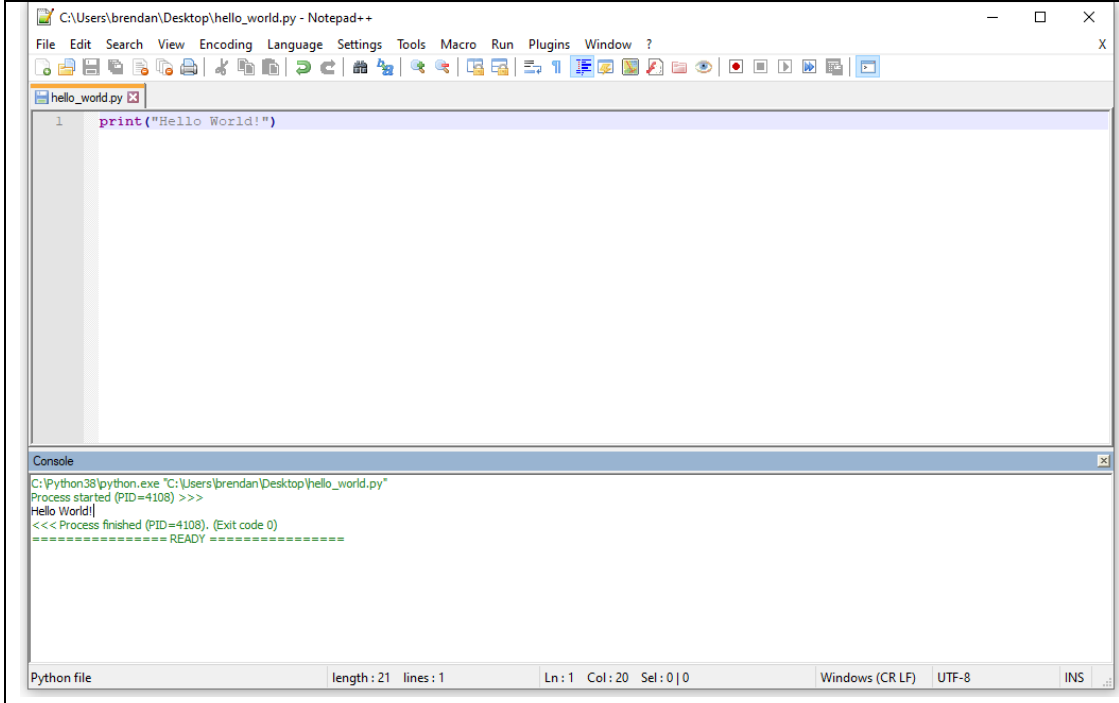


- ⑩ Go to **Languages** option and check **Replace by space** and keep the default tab size of 4. Now you can use tab and it will add 4 spaces. To exit the Preferences Option, click on **[Close]** button.



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Write an **obligatory Hello World code** as shown in the screenshot, press **Ctrl + S** keys to save the file as `hello_world.py`, then press **Ctrl + F6** keys to run the script. Now, **your Notepad++ is ready for Chapter 2 exercises.**



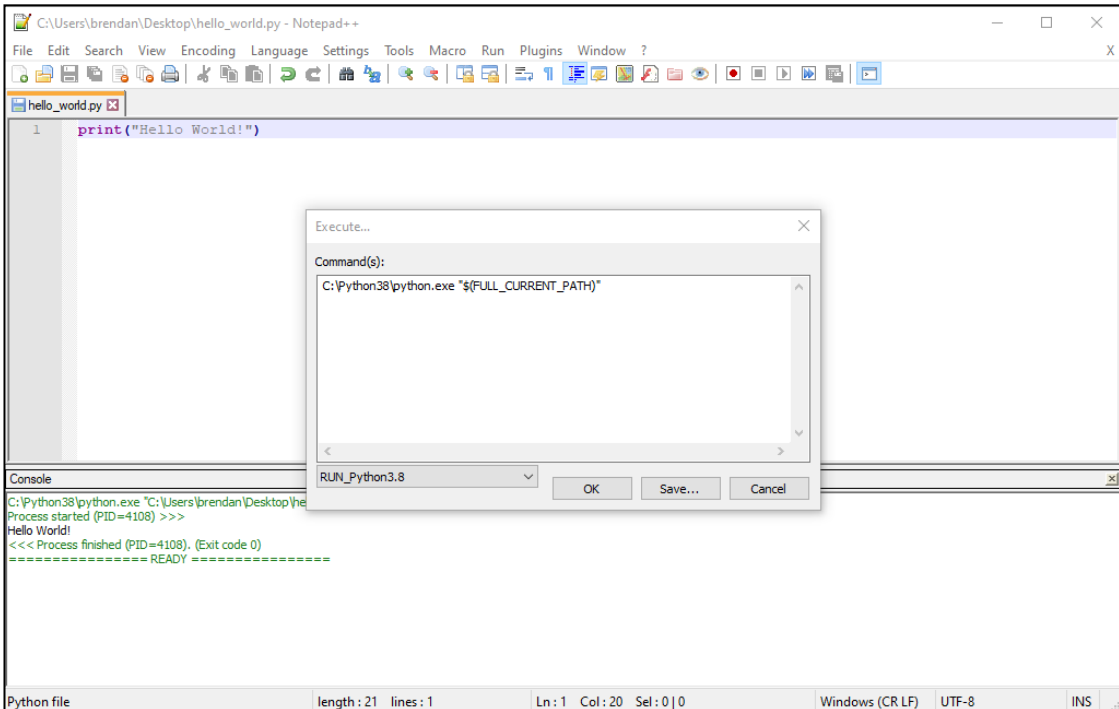
The screenshot shows the Notepad++ application window. The title bar reads "C:\Users\brendan\Desktop\hello_world.py - Notepad++". The menu bar includes File, Edit, Search, View, Encoding, Language, Settings, Tools, Macro, Run, Plugins, Window, and ?. The toolbar contains various icons for file operations and editing. The main text area shows a single line of code: `1 print("Hello World!")`. Below the text area is a console window with the following output:

```
C:\Python38\python.exe "C:\Users\brendan\Desktop\hello_world.py"
Process started (PID=4108) >>>
Hello World!
<<< Process finished (PID=4108). (Exit code 0)
===== READY =====
```

 The status bar at the bottom indicates "Python file", "length: 21 lines: 1", "Ln: 1 Col: 20 Sel: 0 | 0", "Windows (CR LF)", "UTF-8", and "INS".

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Alternatively, you can press **F6** key; it will prompt you to confirm the application to run the code. Click on **[OK]** button to run your script.

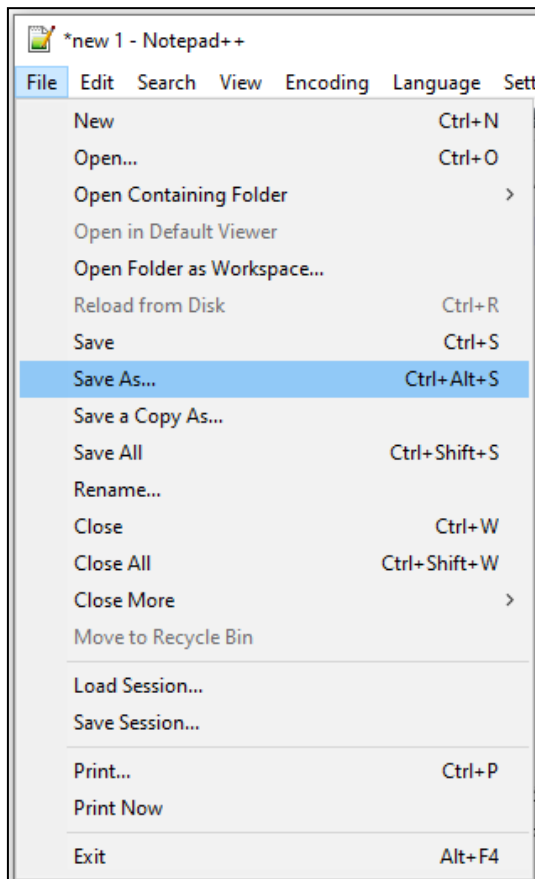


The screenshot shows the Notepad++ application window with an "Execute..." dialog box open in the foreground. The dialog box has a "Command(s):" label and a text area containing the command: `C:\Python38\python.exe "%FULL_CURRENT_PATH%"`. Below the text area is a dropdown menu showing "RUN_Python3.8". At the bottom of the dialog are "OK", "Save...", and "Cancel" buttons. The background Notepad++ window shows the same code as in the previous screenshot, and the console window also displays the same output:

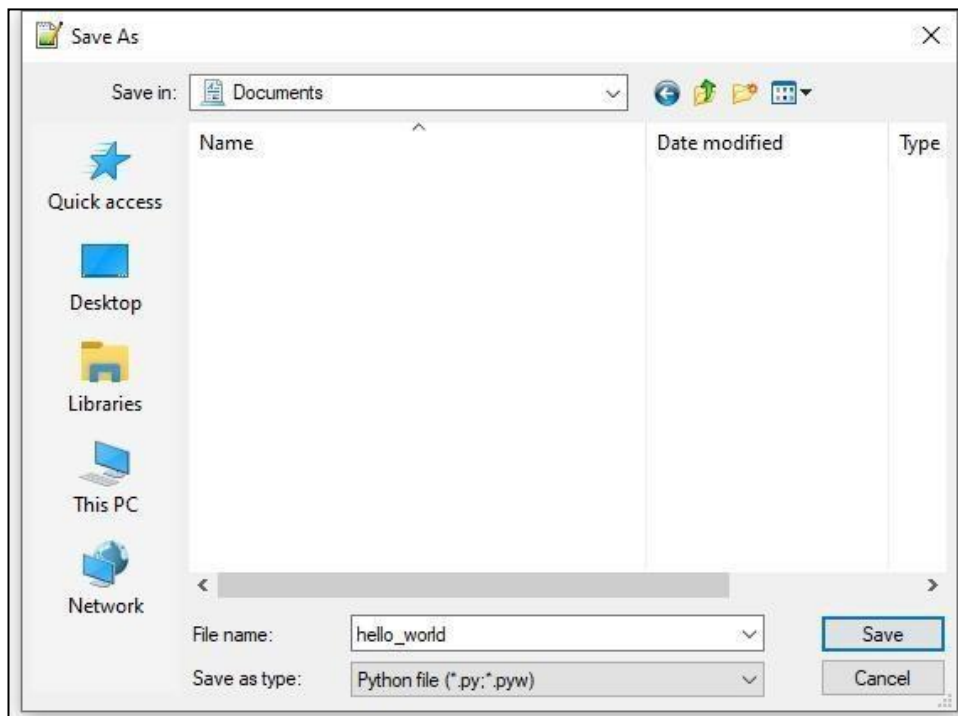
```
C:\Python38\python.exe "C:\Users\brendan\Desktop\hello_world.py"
Process started (PID=4108) >>>
Hello World!
<<< Process finished (PID=4108). (Exit code 0)
===== READY =====
```

 The status bar at the bottom of Notepad++ is identical to the previous screenshot.

- ⑬ Another option to save your file as .py script is by going to [File] > [Save As...].



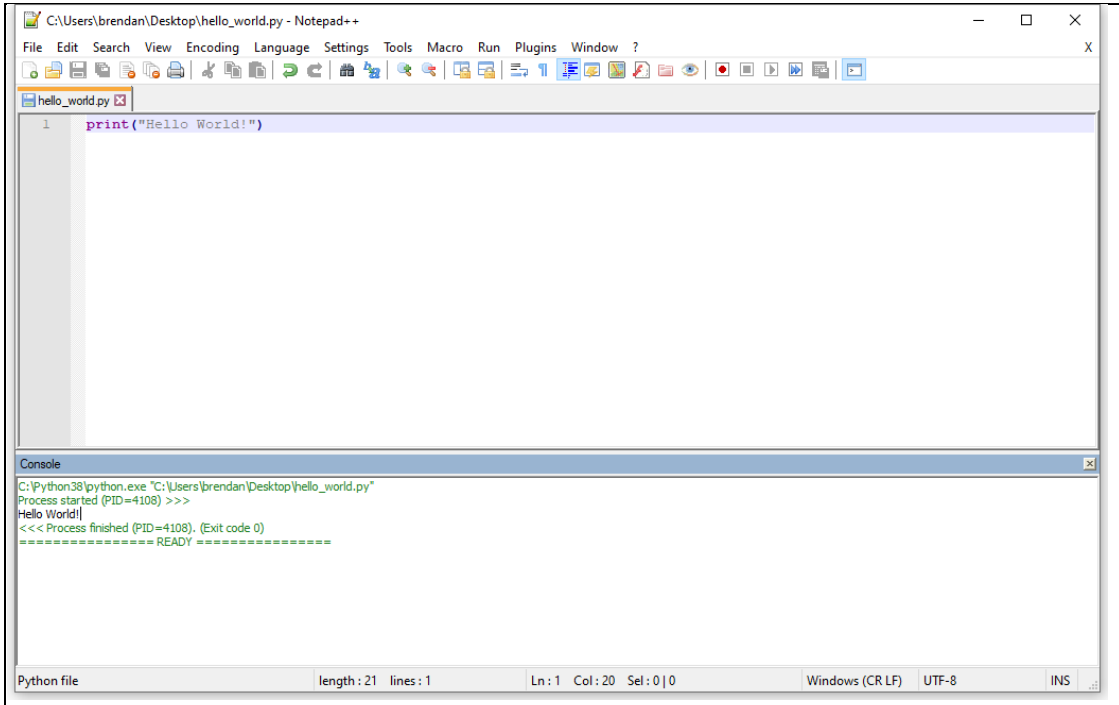
- ⑭ In step 9, you unchecked [Use New style dialog] option and now it will allow us to save the script as .py or .pyw file without specifying the file extension.



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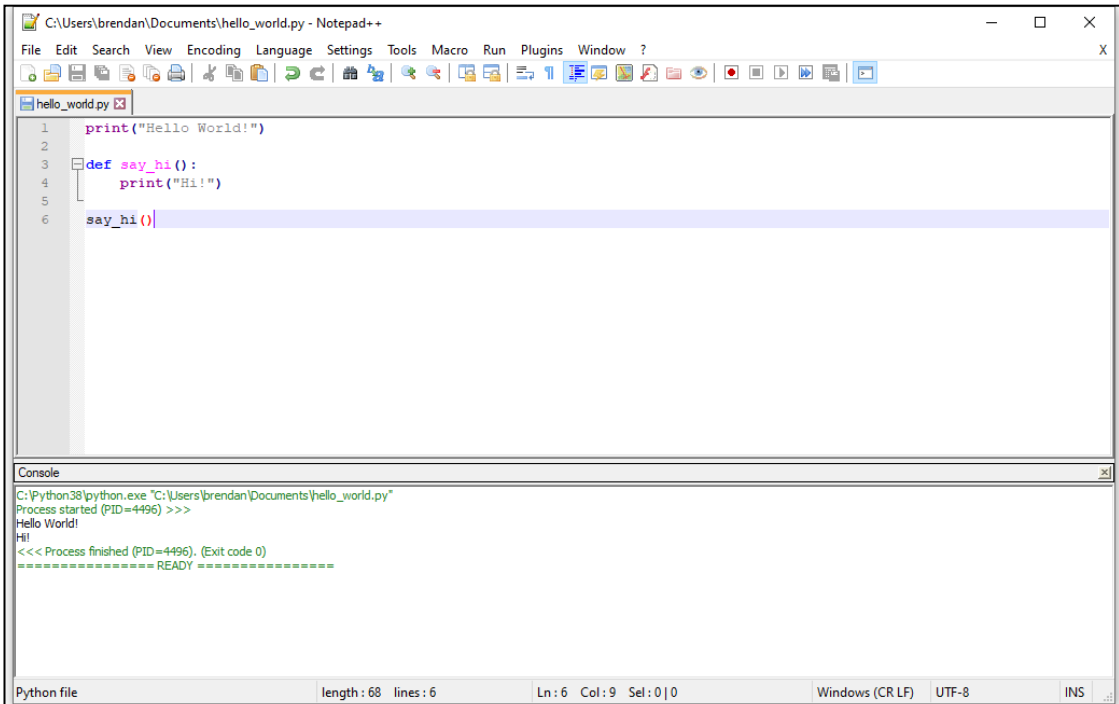
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- ⑮ Run your code by pressing **Ctrl + F6** keys together on your keyboard. Your code will run and print out **"Hello, World!"**



The screenshot shows a Notepad++ window titled "C:\Users\brendan\Desktop\hello_world.py - Notepad++". The menu bar includes File, Edit, Search, View, Encoding, Language, Settings, Tools, Macro, Run, Plugins, Window, and ?. The toolbar contains various icons for file operations and development. The editor shows a single line of Python code: `print("Hello World!")`. Below the editor is a console window with the following output: `C:\Python38\python.exe "C:\Users\brendan\Desktop\hello_world.py"`, `Process started (PID=4108) >>>`, `Hello World!`, `<<< Process finished (PID=4108). (Exit code 0)`, and `===== READY =====`. The status bar at the bottom indicates "Python file", "length: 21 lines: 1", "Ln: 1 Col: 20 Sel: 0 | 0", "Windows (CR LF)", "UTF-8", and "INS".

- ⑯ To test code block and tab indentation, create a simple `say_hi` function to `hello_world.py`. Then run the script for a verification.

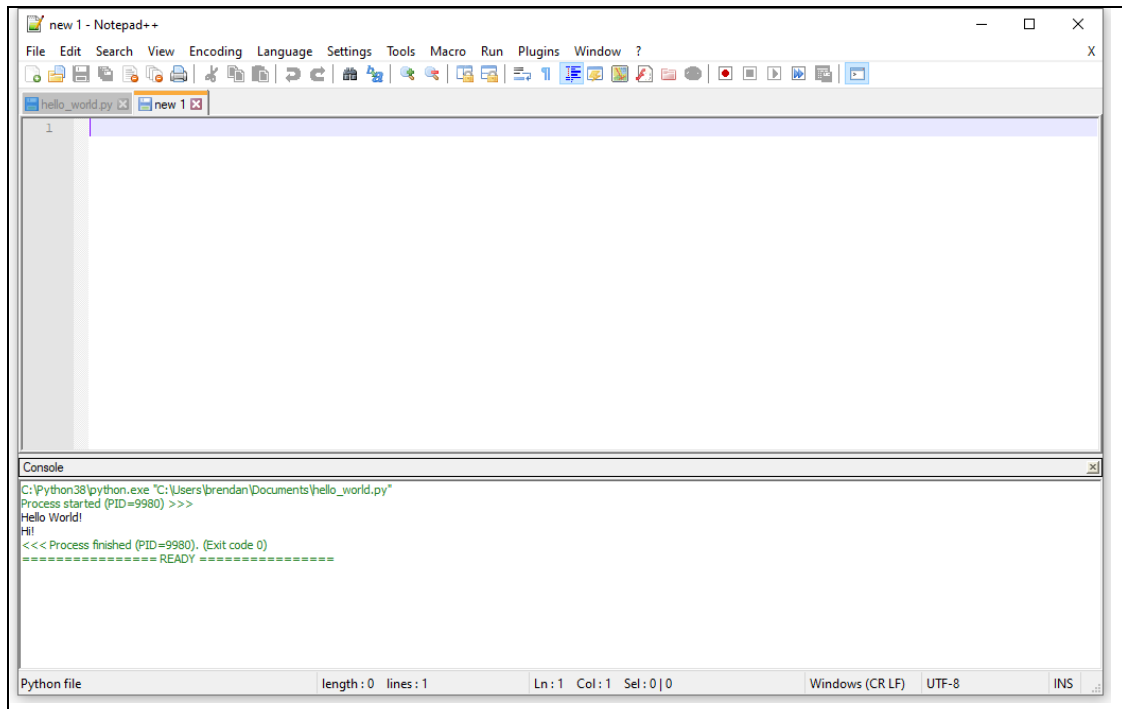


The screenshot shows a Notepad++ window titled "C:\Users\brendan\Documents\hello_world.py - Notepad++". The menu bar and toolbar are the same as in the previous screenshot. The editor shows a Python script with six lines: `print("Hello World!")`, `def say_hi():`, `print("Hi!")`, `say_hi()`, and two blank lines. The console window shows the output: `C:\Python38\python.exe "C:\Users\brendan\Documents\hello_world.py"`, `Process started (PID=4496) >>>`, `Hello World!`, `Hi!`, `<<< Process finished (PID=4496). (Exit code 0)`, and `===== READY =====`. The status bar at the bottom indicates "Python file", "length: 68 lines: 6", "Ln: 6 Col: 9 Sel: 0 | 0", "Windows (CR LF)", "UTF-8", and "INS".

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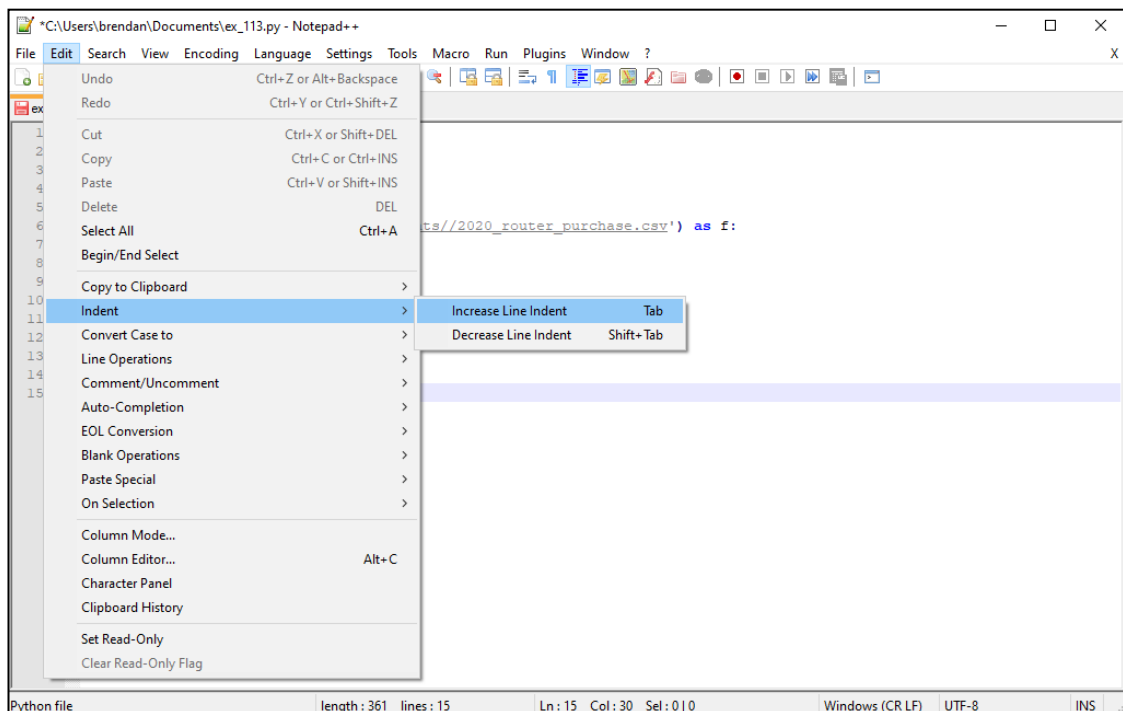
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- ⑪ Now press **Ctrl + N** keys to create a new text file on Notepad++, now you are ready for your first Python exercise.

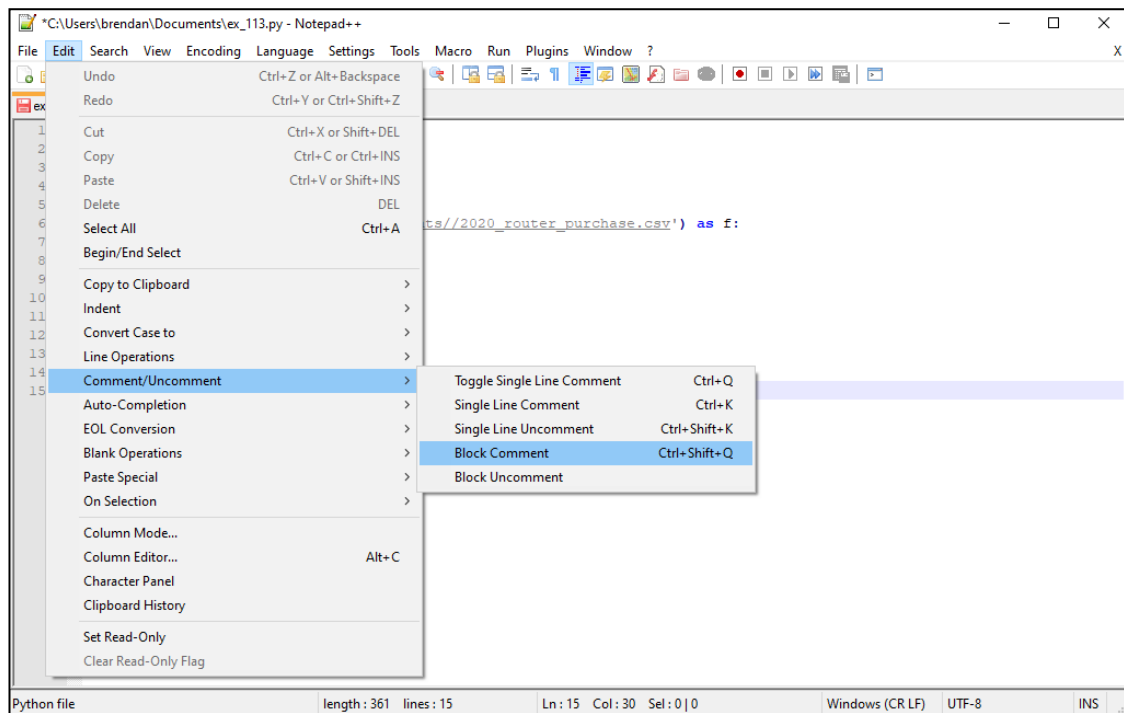


- ⑫ Check out the following timesaving feature on Notepad++.

Notepad++ handy feature 1–Increasing and decreasing Indentation on block of codes



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“You have now completed Chapter 02 preparation tasks. Let’s go and learn Python!”