

Instructions to Start with Python

Primarily, we shall be working on the following platform:

- (1) Python
- (2) Eclipse IDE (Integrated Development Environment)
- (3) PyDev plugin

Though, one can work with only Python, working with PyDev integrated Eclipse is not only interesting but it makes programming significantly interactive and easier.

1. Installing Python

All latest version of Python is available to download at <https://www.python.org/downloads/>

Usually we shall NOT be working with Python 2.7.xxx version, rather we shall be working with Python 3.x.x version.

- (i) You can first download Python 3.8.2 (as I have done) and save somewhere on your computer. The file, python-3.8.2.exe, will be downloaded.
- (ii) Double click on python-3.8.2.exe (Windows installer of python will be launched).
- (iii) First window of python installer will look as shown in Figure 1.



Figure 1: First window of Python installer

- (iv) Check Add Python 3.8 to PATH. If you do not check, you will need to add the python interpreter directory to the PATH variable manually.
 - (a) If you want to change python installation directory, click on **Customize installation**, change the path to the desired directory and install. Otherwise you can let python install in default directory like the one shown in Figure 1.
- (v) For installing the python in default directory, click **Install Now**. Setup/installation progress will be shown as in Figure 2.

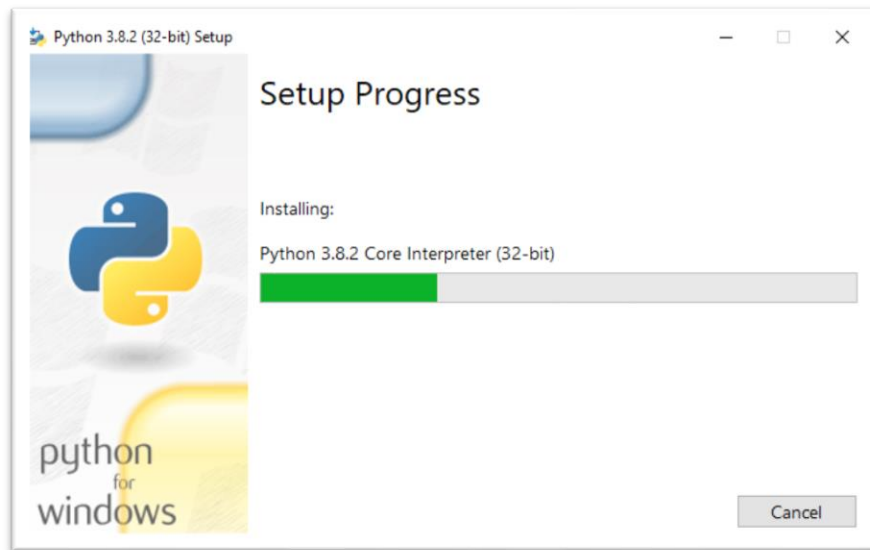


Figure 2: Installation Progress

- (vi) Once installation is complete, you will see the window as shown in Figure 3. Click at **Close** to close the window. Now python installation is complete.



Figure 3: When installation is complete

1.1 Testing python installation

- (i) Type **cmd** in search box of your Windows or alternatively go the **Start** of Windows and navigate to find **Command Prompt** and click to open it.
- (ii) A Command Prompt window will appear as shown in Figure 4.

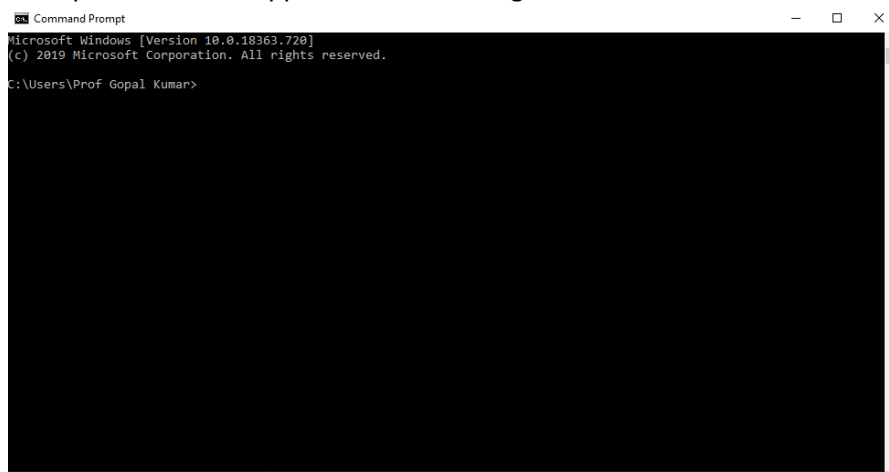


Figure 4: Command Prompt

- (iii) On the Command Prompt, type *python* and then press *enter* button on your keyboard. It should display the python version installed as shown in Figure 5. Figure 5 indicates that python 3.8.2 is installed on the computer.

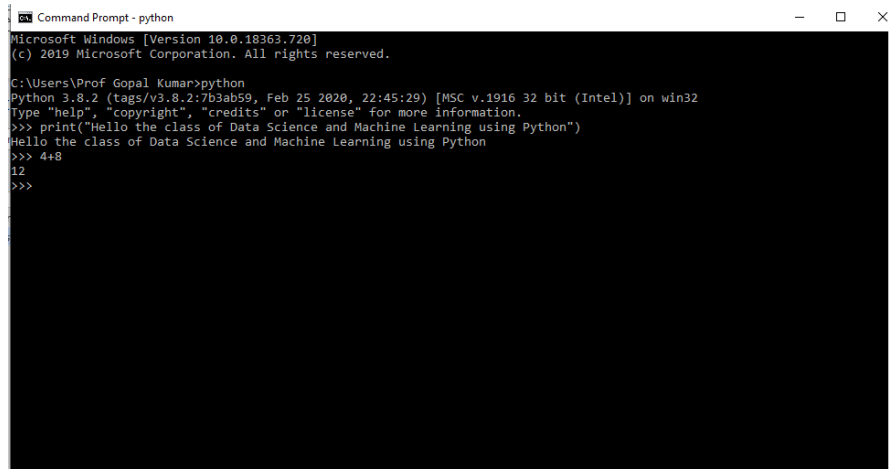


Figure 5: Testing python

- (iv) You also see the symbol `>>>` indicating you have entered python environment. Now all commands of python will directly work in this environment.
- (v) To test the python, type *print("Hello the class of Data Science and Machine Learning using Python")* and press *enter*. It will echo *Hello the class of Data Science and Machine Learning using Python* as shown in Figure 5.
- (vi) To test a simple arithmetic, type *4+8* and press *enter*. It should echo *12*.
- (vii) If everything works as above, python is rightly installed.

2. Installing Eclipse IDE

To make Eclipse work, it requires JRE/JDK. To test if JRE is installed, use the following command on your command prompt:

```
java -version
```

If JRE is installed, it will display the JRE version (java version "1.8.0_221", for example)

If it is not installed on your computer, please download and install it from

<https://www.oracle.com/java/technologies/javase-jdk14-downloads.html>. As per your operating system, download and install JDK. Please note down that JDK includes JRE.

How to install Eclipse?

- (i) Go to the page <https://www.eclipse.org/downloads/download.php?file=/oomph/epp/2020-03/R/eclipse-inst-win64.exe>
- (ii) Click on **Download** to download the eclipse and save it on your computer.
- (iii) It will be downloaded as a zip file. Right click on this zip file and extract it. All eclipse files and directory will be extracted in a folder named as **eclipse**.
- (iv) Go to the folder named as **eclipse** and double click on **eclipse.exe** file. Now eclipse will begin to start.
- (v) After few seconds, a window with default workspace directory (workspace directory is a folder where all projects, modules, program files, and other types of file will be kept.) will appear. If you want to change the default workspace directory you can do so by clicking at **Browse...** (as shown in Figure 6) and selecting or creating the desired workspace directory.

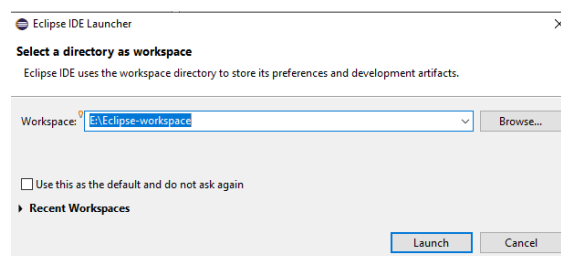


Figure 6: Eclipse workspace selection

- (vi) Click at **Launch** and a welcome window will appear as shown in Figure 7.
- (vii) To close the welcome page, click at **X** present on the **Welcome** tab as shown in Figure 7.

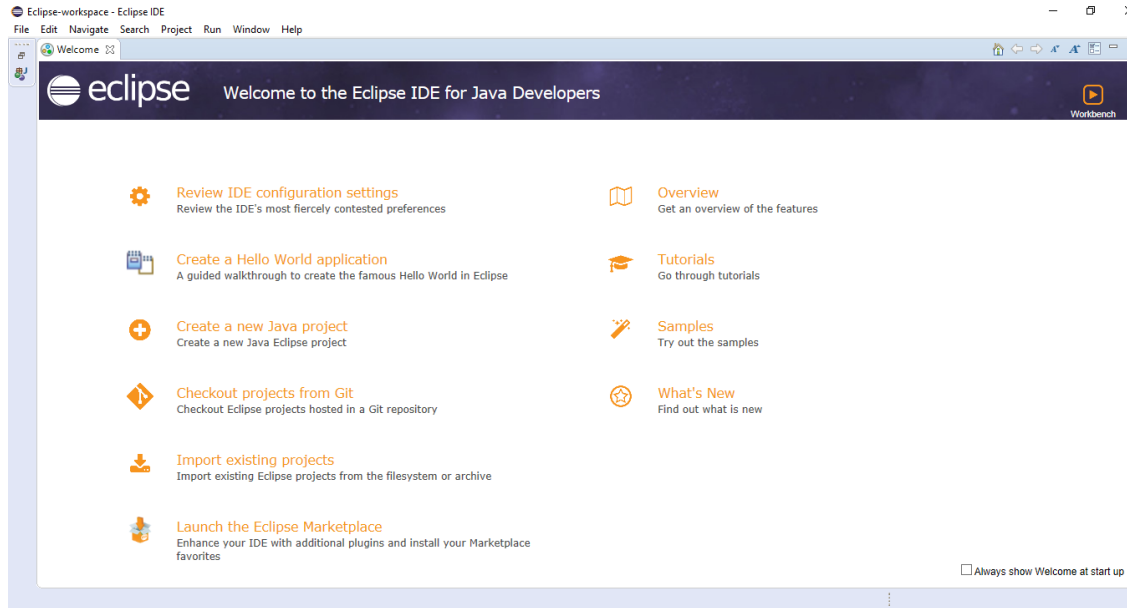


Figure 7: Eclipse Welcome Window

3. Installing PyDev

PyDev is an Eclipse plugin. To work in python environment, PyDev plugin has to be installed/integrated with the Eclipse.

3.1 How to install PyDev?

With Eclipse open, do the followings on the Eclipse:

- (i) Go to **Help** and click on **Install New Software...** as shown in Figure 8. A window as shown in Figure 9 will appear.

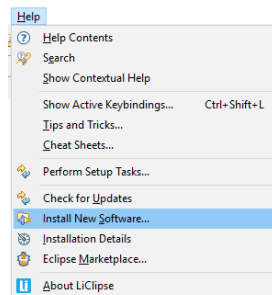


Figure 8: Installing PyDev Part 1

- (ii) In the box named as **Work with**, enter <http://www.pydev.org/updates> and press *enter* on your keyboard.
- (iii) PyDev installation option will appear as shown in **Error! Reference source not found..**

- (iv) Check all the options including **PyDev** and **PyDev Mylyn Integration (optional)** as shown in Figure 11. As shown in Figure 11, you can uncheck **Contact all updates sites during install to find required software** as it may take much more time to install the PyDev.
- (v) Click on **Next >** to install the PyDev. It will take few minutes to install the PyDev.

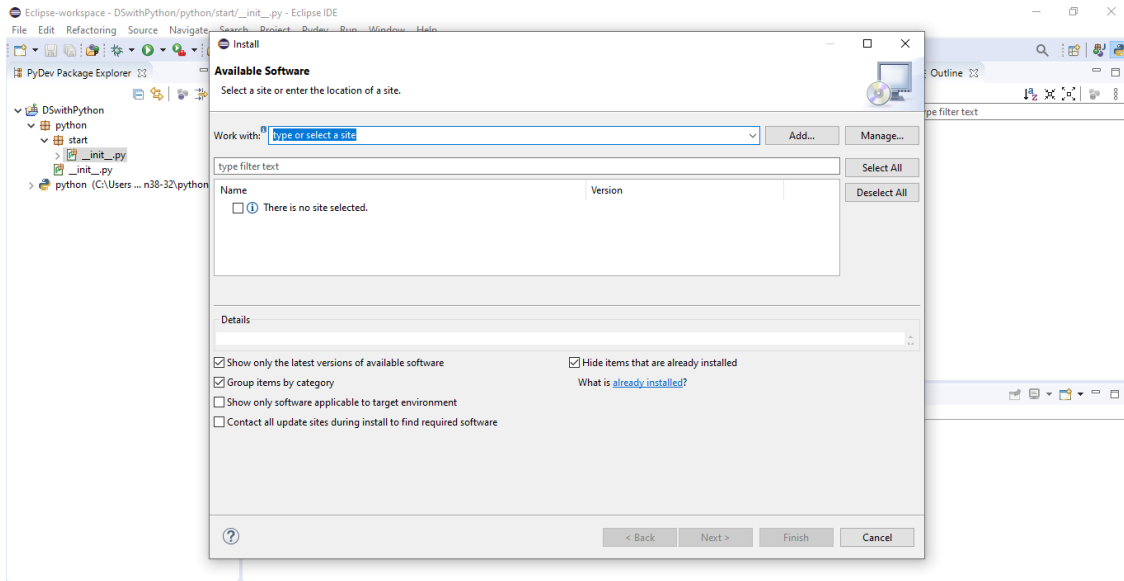


Figure 9: Installing PyDev Part 2

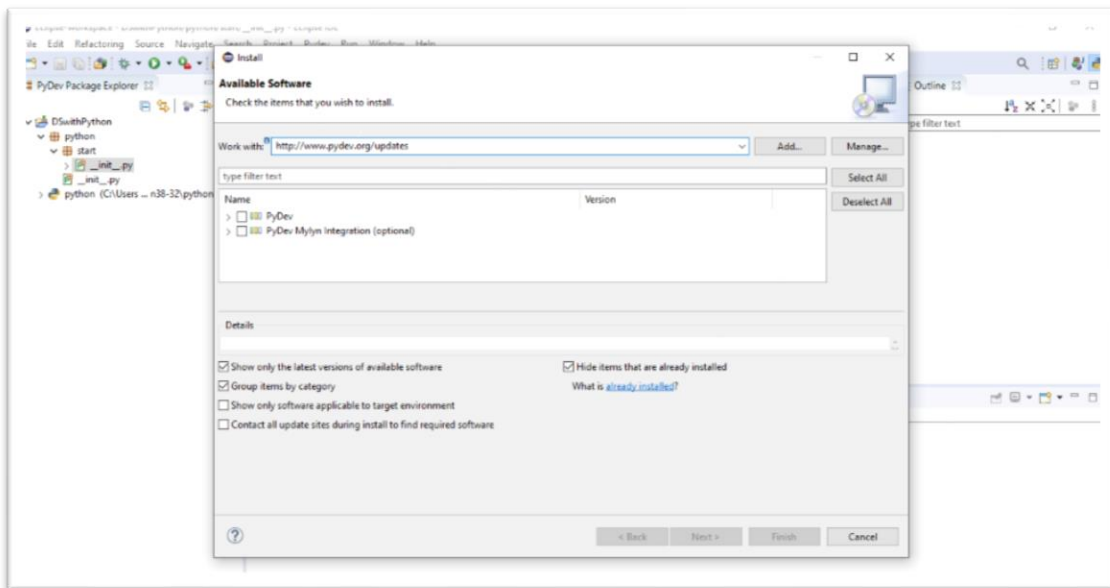


Figure 10: PyDev installation options

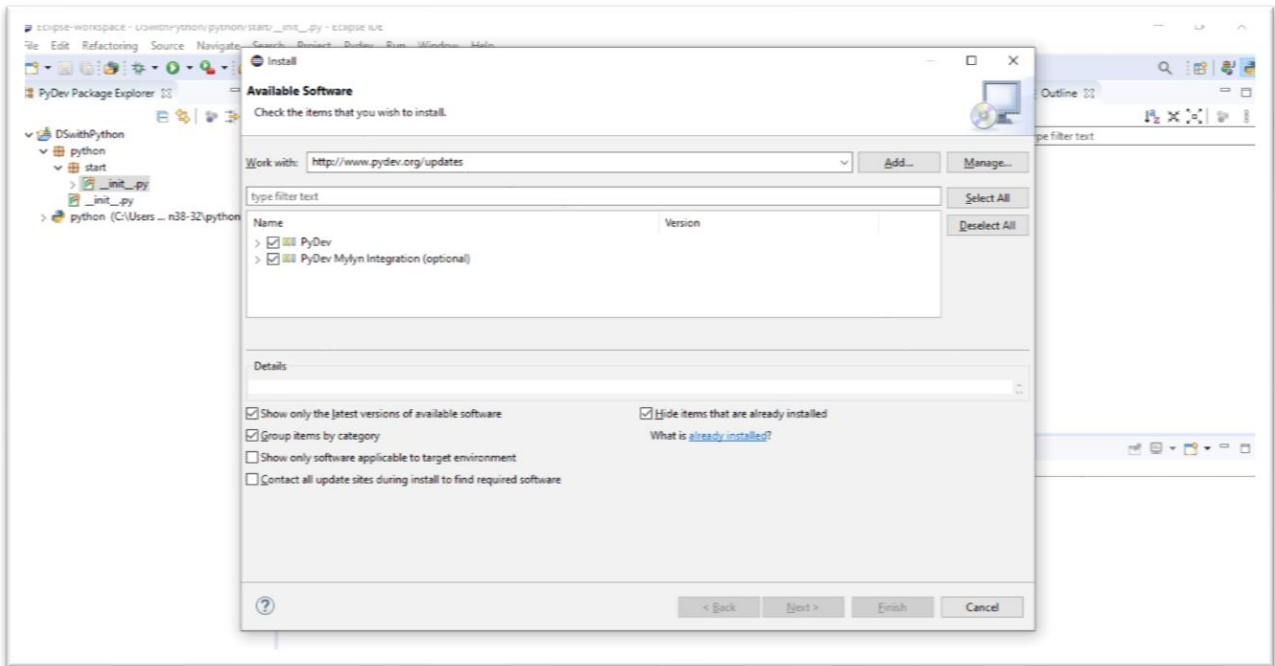


Figure 11: Checking PyDev options to install

3.2 Check if PyDev is installed

- (i) Go to **Window > Preferences** as shown in Figure 12. A window shown in Figure 13 will appear.
- (ii) If PyDev is installed you will see an option, **> PyDev** as shown in Figure 13. The option is also highlighted in the Figure 13.

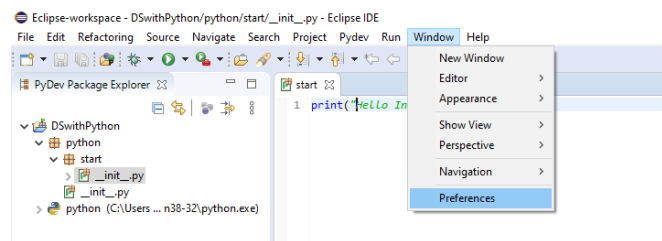


Figure 12: Check PyDev installation part 1

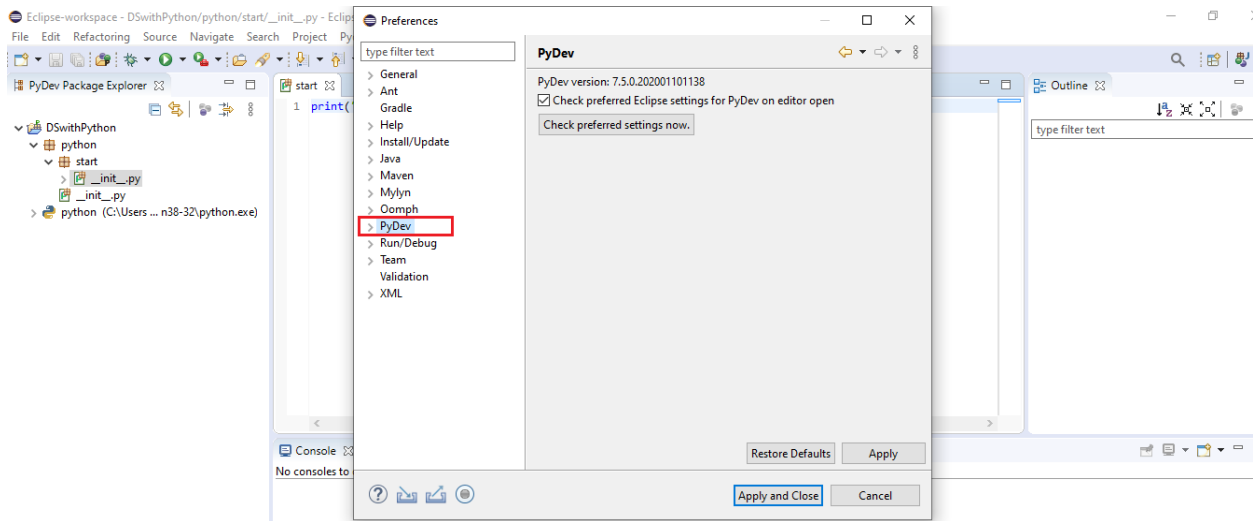


Figure 13: Check PyDev installation part 2

3.3 Configuring Python interpreter

- (i) In the same window shown in Figure 13, Click on **PyDev > Interpreters > Python Interpreter**. A window as shown in Figure 14 will appear.

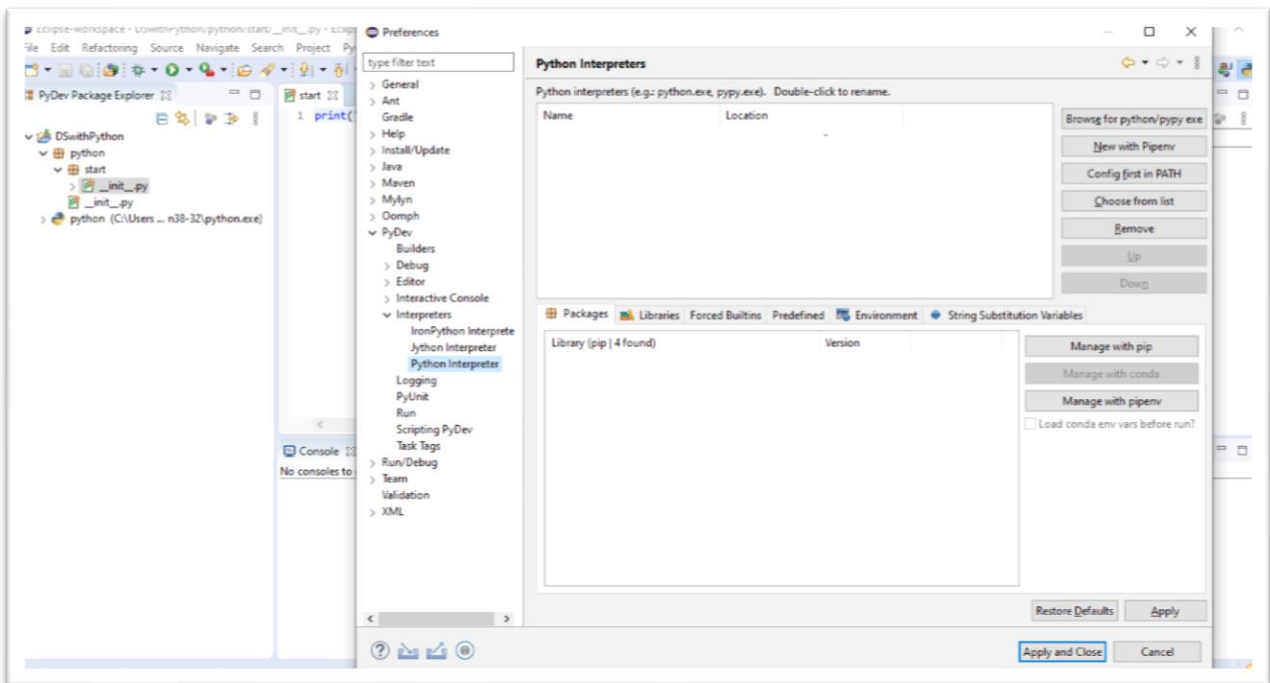


Figure 14: Configuring Python interpreter

- (ii) Click **Config first in PATH** as shown in right top of the window shown in Figure 14. Usually, this option will automatically identify home directory of python installation and python.exe. If it works it will look like the one shown in Figure 15. Otherwise follow the next step.
 - a. Click on **Browse for Python/pypy exe**, and select *python.exe* file manually which must be kept in the home directory of python installation.
- (iii) If python.exe is pointed out rightly and Name and Location field are populated in the top part of the window as shown in Figure 15, under **Libraries** tab you will see *lib* and *site-packages* folders are identified automatically.
- (iv) Click on **Apply and Close**. The configuration window will be closed.

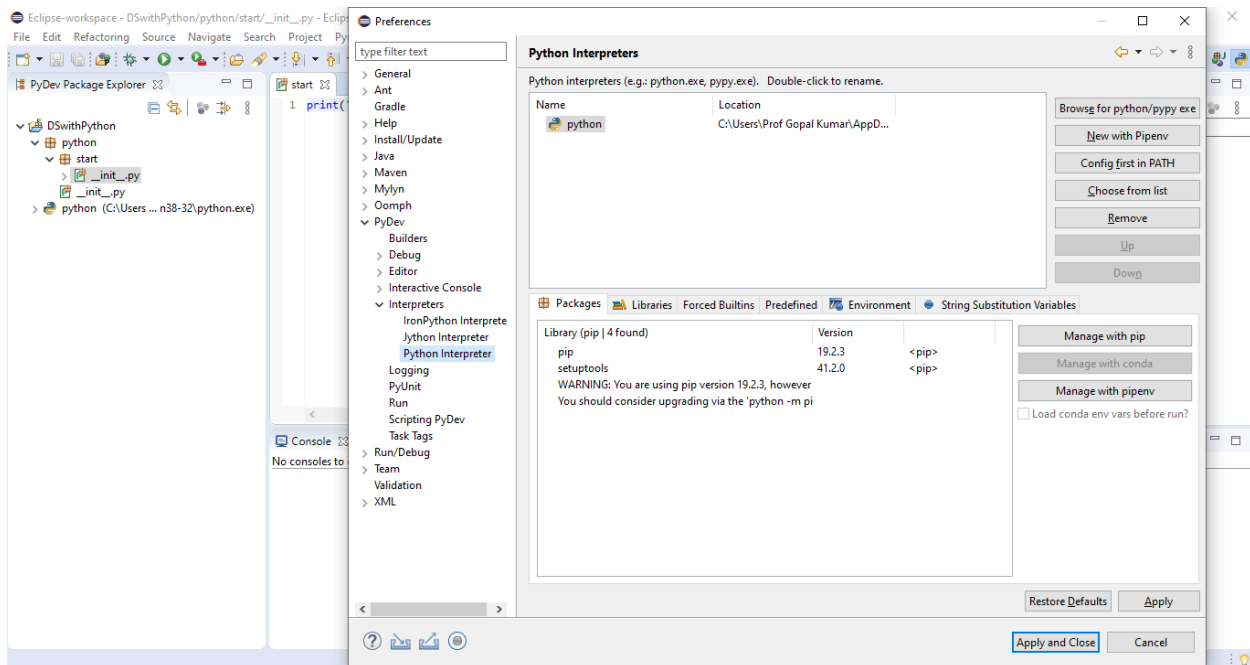


Figure 15: Finding Python Interpreter

3.4 Running or testing python

- (i) Click **Window > Perspective > Open Perspective > Other** as shown in Figure 16. A window as shown in Figure 17 will appear.
- (ii) Select the option **PyDev** and click **Open**. Eclipse will switch to the python development environment.
- (iii) Go to **File > New > PyDev Project**. Enter Project name, let us say **DSwithPython**. Let everything be default and click finish. A project named DSwithPython will be created and you can see it in the left pan of the eclipse, i.e., PyDev Package Explorer.
- (iv) Right click on the DSwithPython, select **New > PyDev Package** as shown in Figure 18.

- (v) Enter the name of the package. For example, **python.start**. A folder hierarchy shown in Figure 19 will be created.
- (vi) Right click on the folder start and click **PyDev Module**. Give a name to the module. Let us say, **testingpython** and click **Finish**. A python file under the folder start will be created.
- (vii) Double click on the file **testingpython** and write `print("Hello the class of Data Science and Machine Learning using Python")`.
- (viii) Right click on the file, **testingpython**, go to **Run As > 1 Python Run** as shown in Figure 20.
- (ix) The output should come on the console, the bottom of the window as shown in Figure 21.

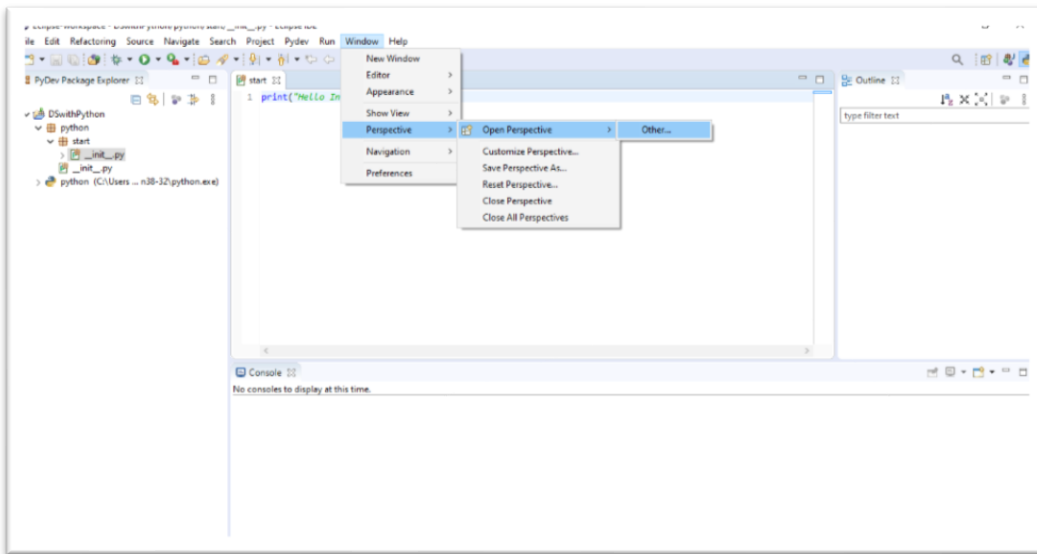


Figure 16: Testing python part 1

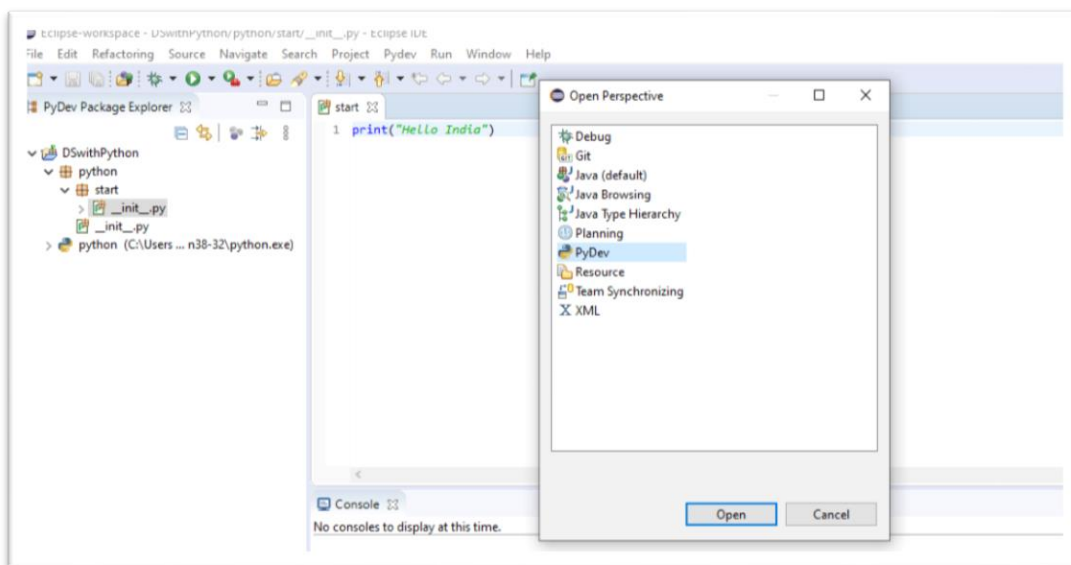


Figure 17: Testing Python part 2

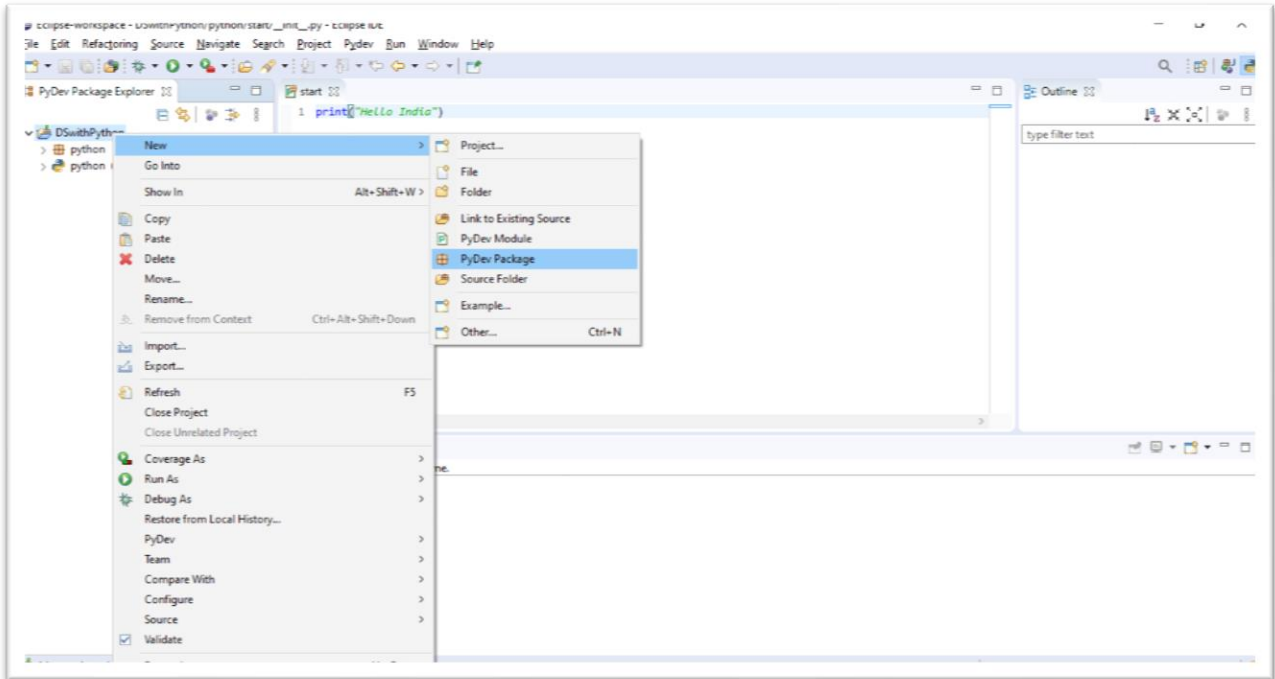


Figure 18: Testing Python part 3

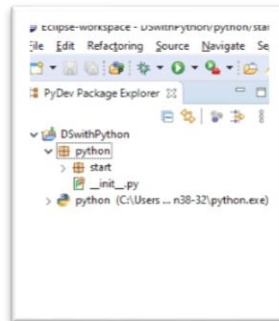


Figure 19: Python project and package

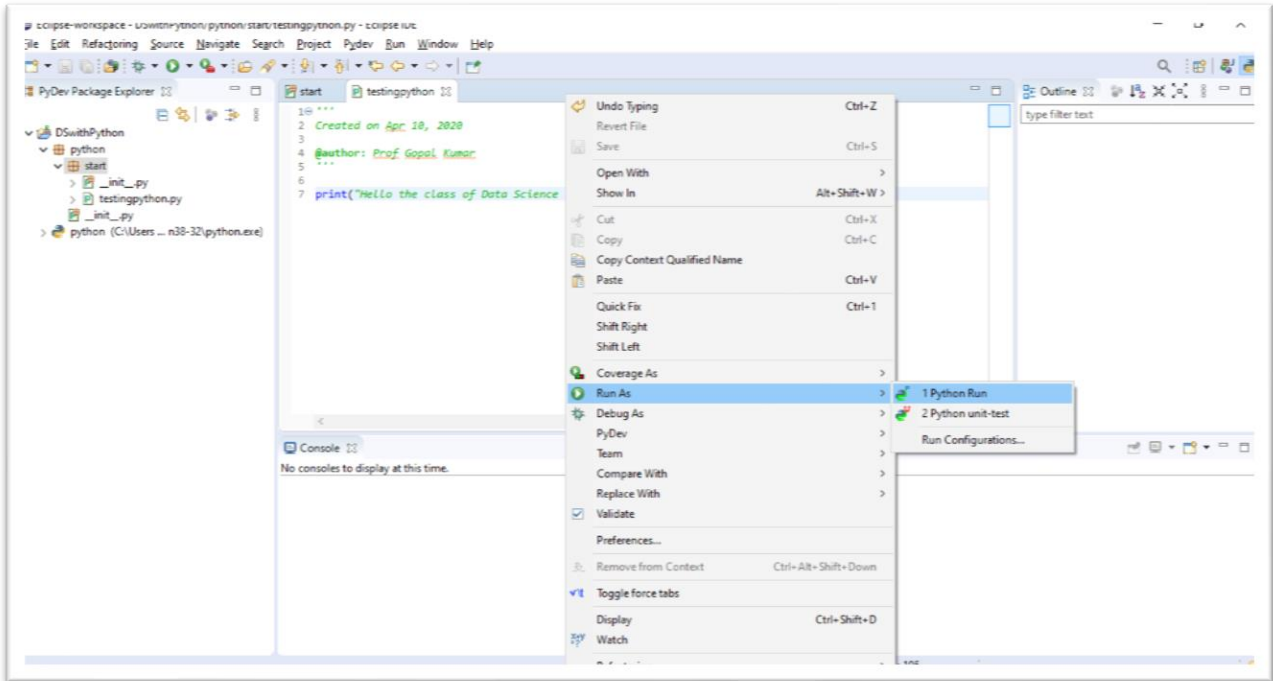


Figure 20: Testing Python part 4

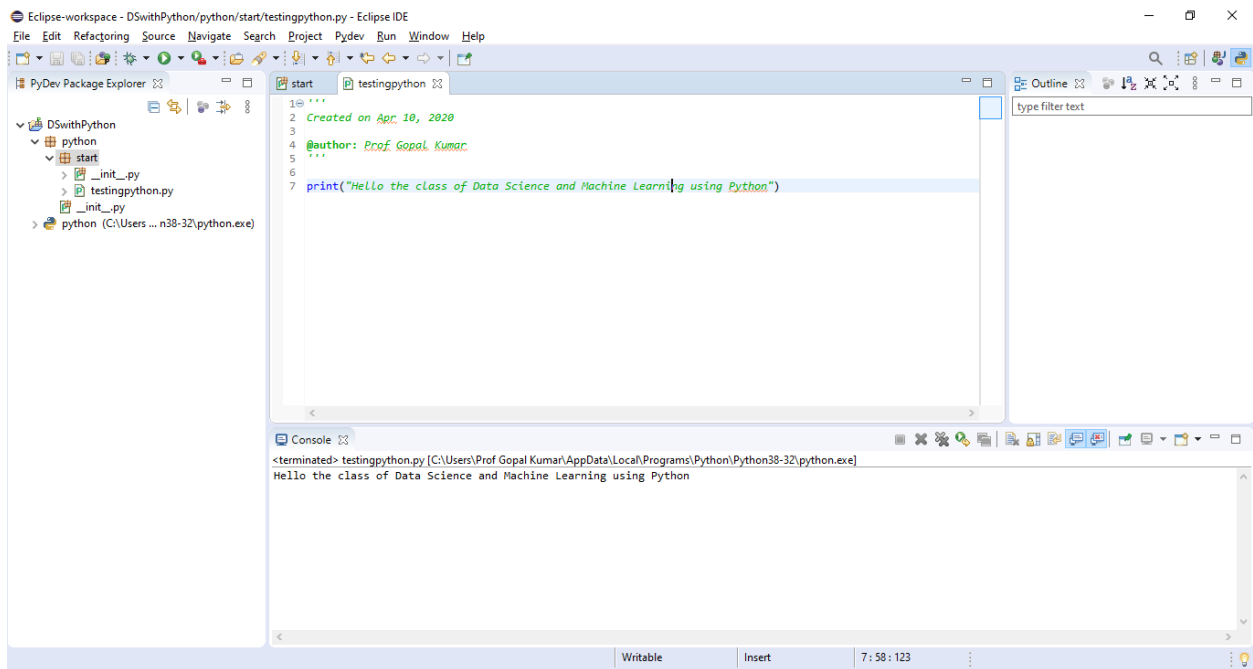


Figure 21: Testing Python part 5