Chapter 5 :

Computer Science

Class XI (As per CBSE Board)

New Syllabus 2019-20

Getting Started With Python

Computational Thinking

Computers can be used to help us to solve problems. However, before a problem can be tackled or solved, the problem itself and the ways in which it could be solved need to be understood.
Computational thinking allows us to do this.

The four cornerstones of computational thinking

decomposition - breaking down a complex problem or system into smaller, more manageable parts

pattern recognition – looking for similarities among and within problems

abstraction – focusing on the important information only, ignoring irrelevant detail

algorithms - developing a step-by-step solution to the problem, or the rules to follow to solve the problem

Python Introduction

It is widely used general purpose,high level programming language.Developed by Guido van Rossum in 1991.

It is used for:

software development,
web development (server-side),
system scripting,
Mathematics.

Features of Python

1. Easy to use – Due to simple syntax rule
2. Interpreted language – Code execution & interpretation line by line
3. Cross-platform language – It can run on windows,linux,macinetosh etc. equally
4. Expressive language – Less code to be written as it itself express the purpose of the code.
5. Completeness – Support wide rage of library
6. Free & Open Source – Can be downloaded freely and source code can be modify for improvement

Shortcomings of Python

1. Lesser libraries – as compared to other programming languages like c++,java,.net
2. Slow language – as it is interpreted languages,it executes the program slowly.
3. Weak on Type-binding – It not pin point on use of a single variable for different data type.
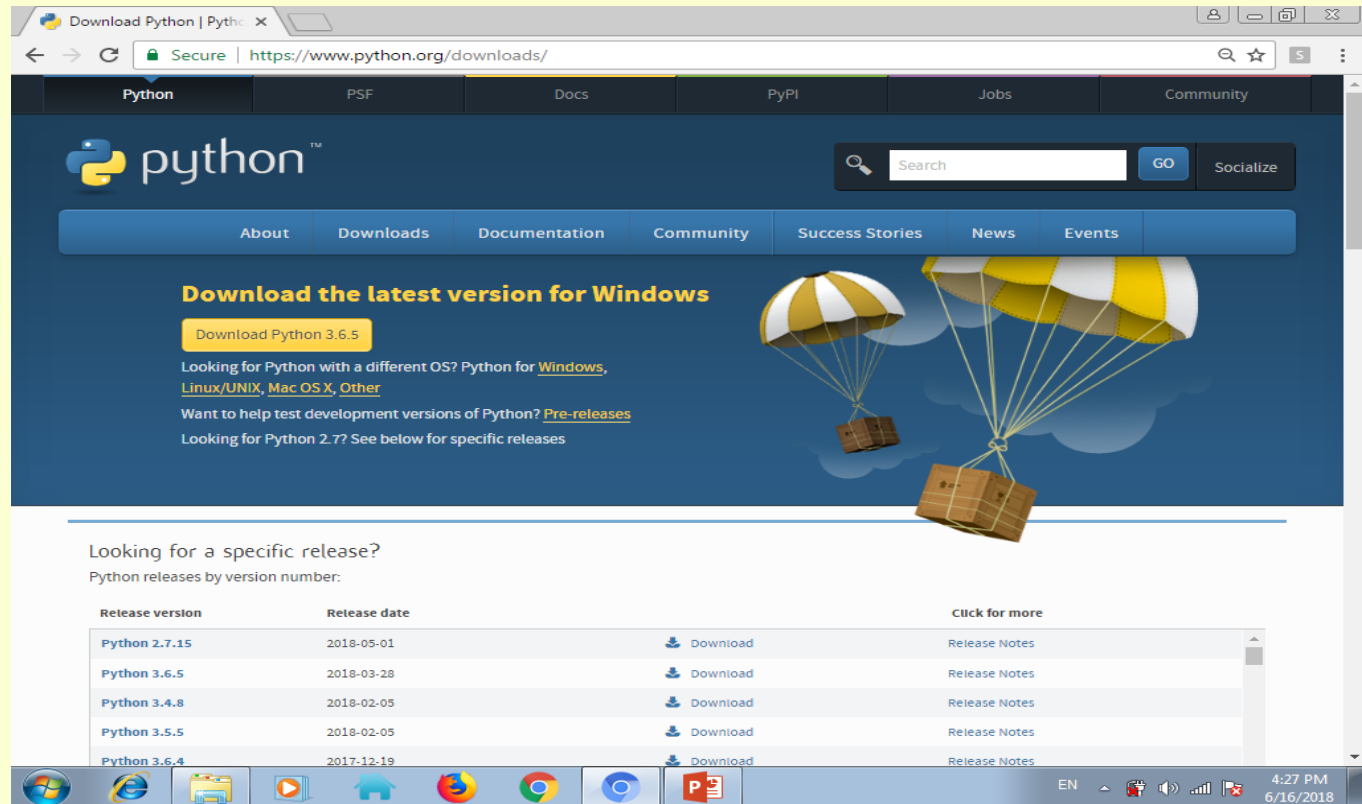
Installing Python

Two Steps Only –

1. Download Python distribution
2. Python installation process

Installing Python

1. Download Python distribution

You can download python distribution from the link given below
https://www.python.org/downloads/

Note – Download only that python distribution/MSI Installer, which is best suited for the Operating system on which you want to install it.

Visit : python.mykvs.in for regular updates

Installing Python

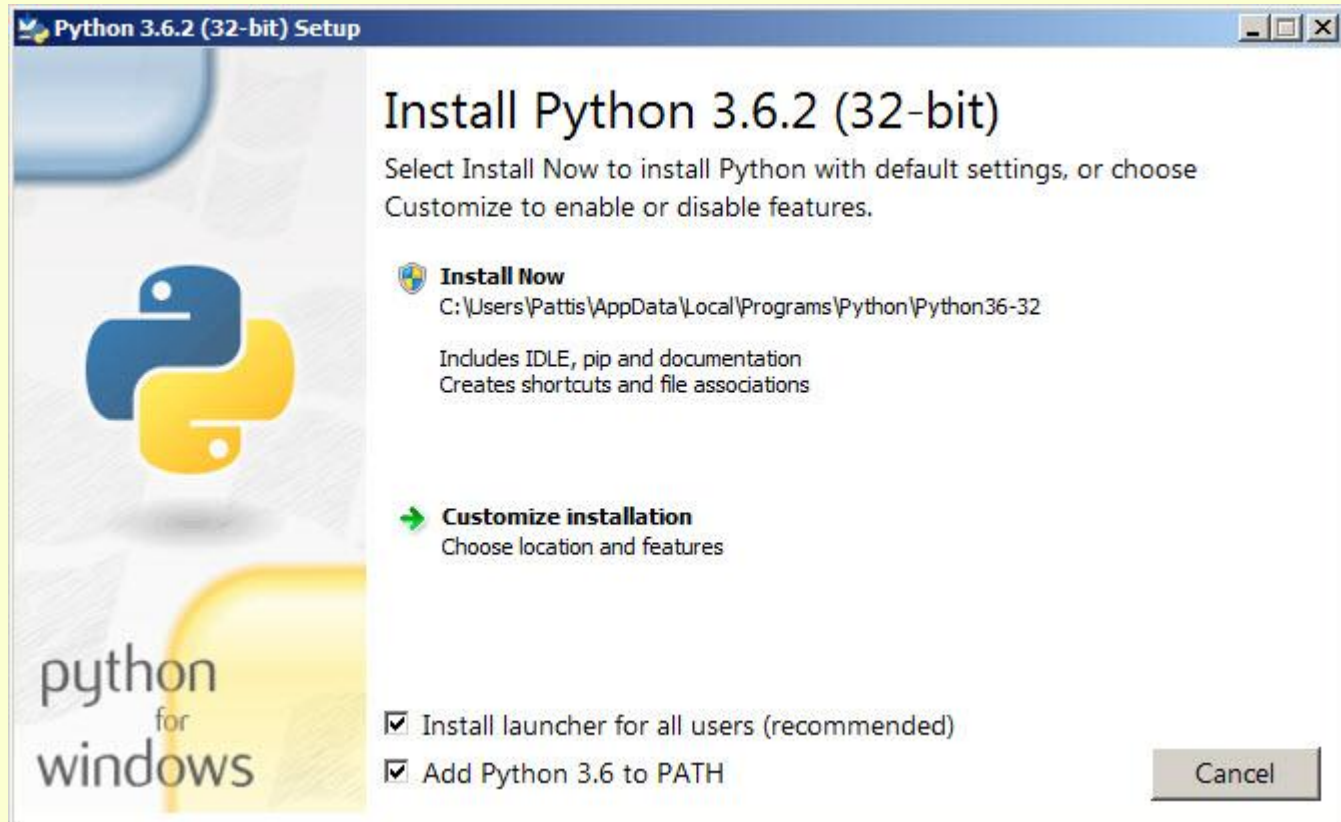## 2. Python installation process

1. Double-click the icon labeling the file **<version>.exe**

Popup window will appear

Click on Run option

Installing Python

2. Setup popup window will appear

If the Python Installer finds an earlier version of Python installed on your computer, the **Install Now** message will instead appear as **Upgrade Now**(and the checkboxes will not appear).
Highlight the **Install Now** (or **Upgrade Now**) message, and then click it
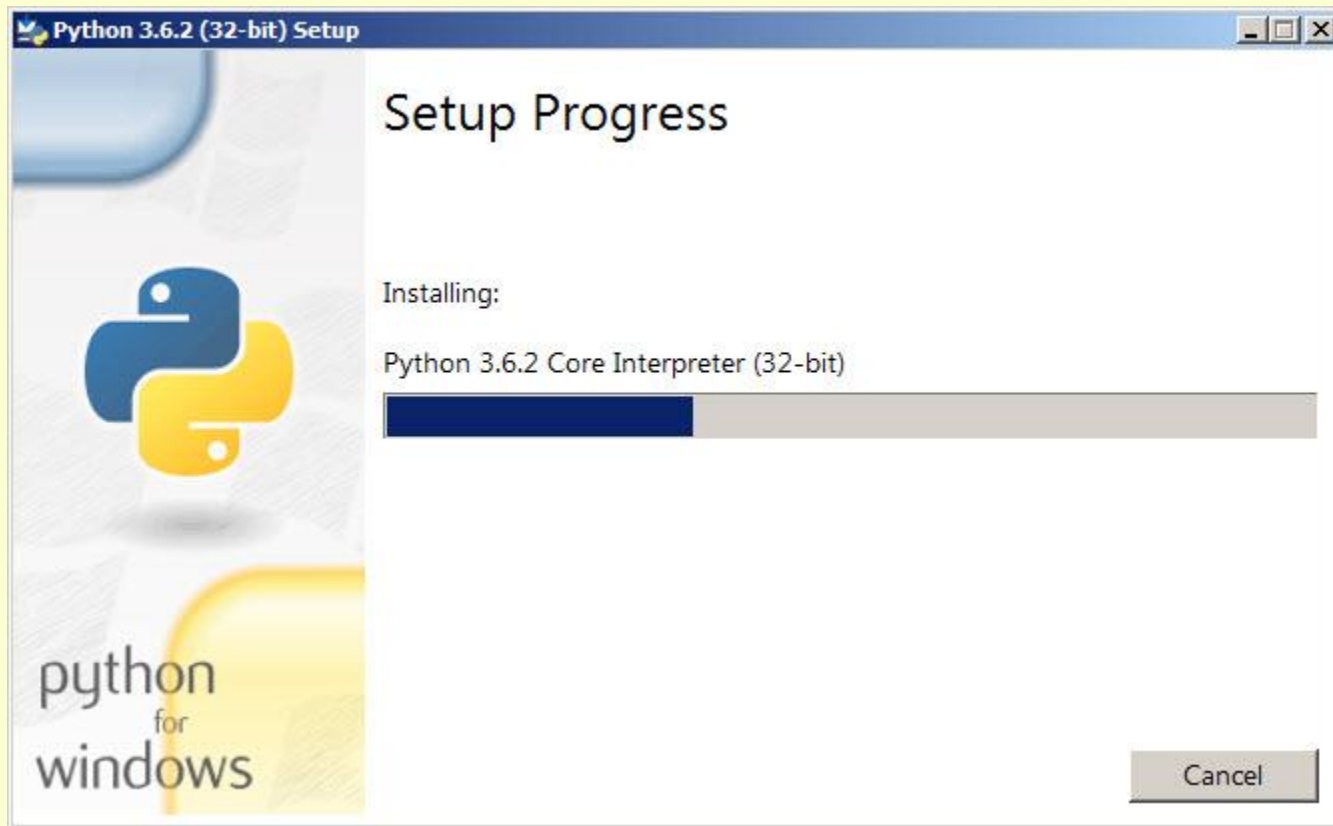
Installing Python

3. **User Account Conrol** pop-up window will appear

Click the **Yes** button.

Installing Python

4. A new **Python <version> Setup** pop-up window will appear with a **Setup Progress** message and a progress bar.

Installing Python

5. Soon, a new **Python <version> Setup** pop-up window will appear with a **Setup was successfully** message

Click the **close** button

How to work in Python

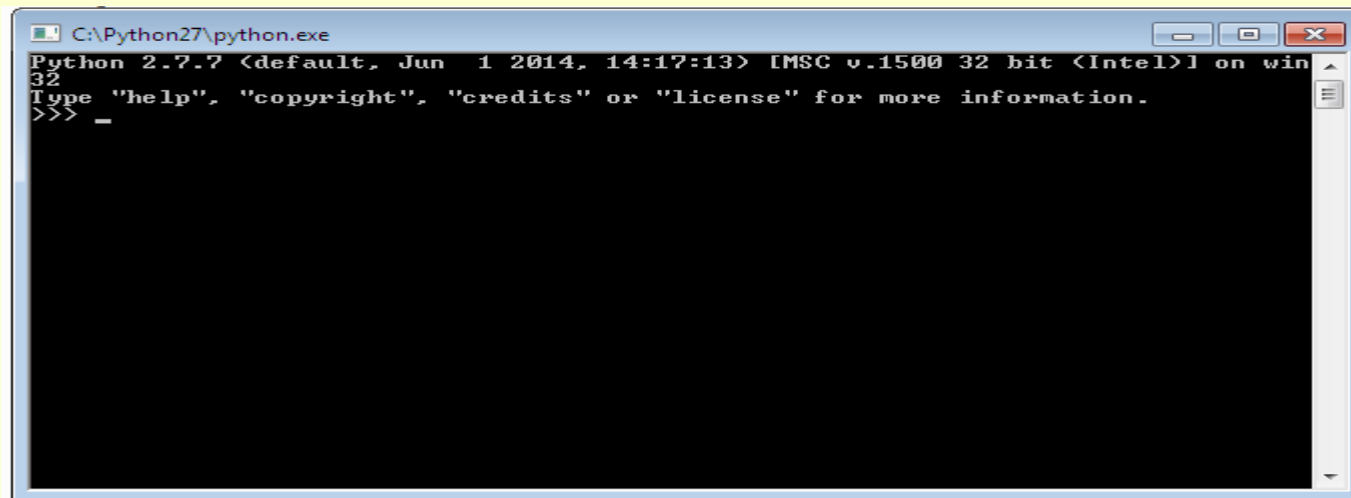After installation of python ,we can work on it in following ways

(i) in Interactive mode
(ii) in Script mode

How to work in Python

(i) in Interactive mode

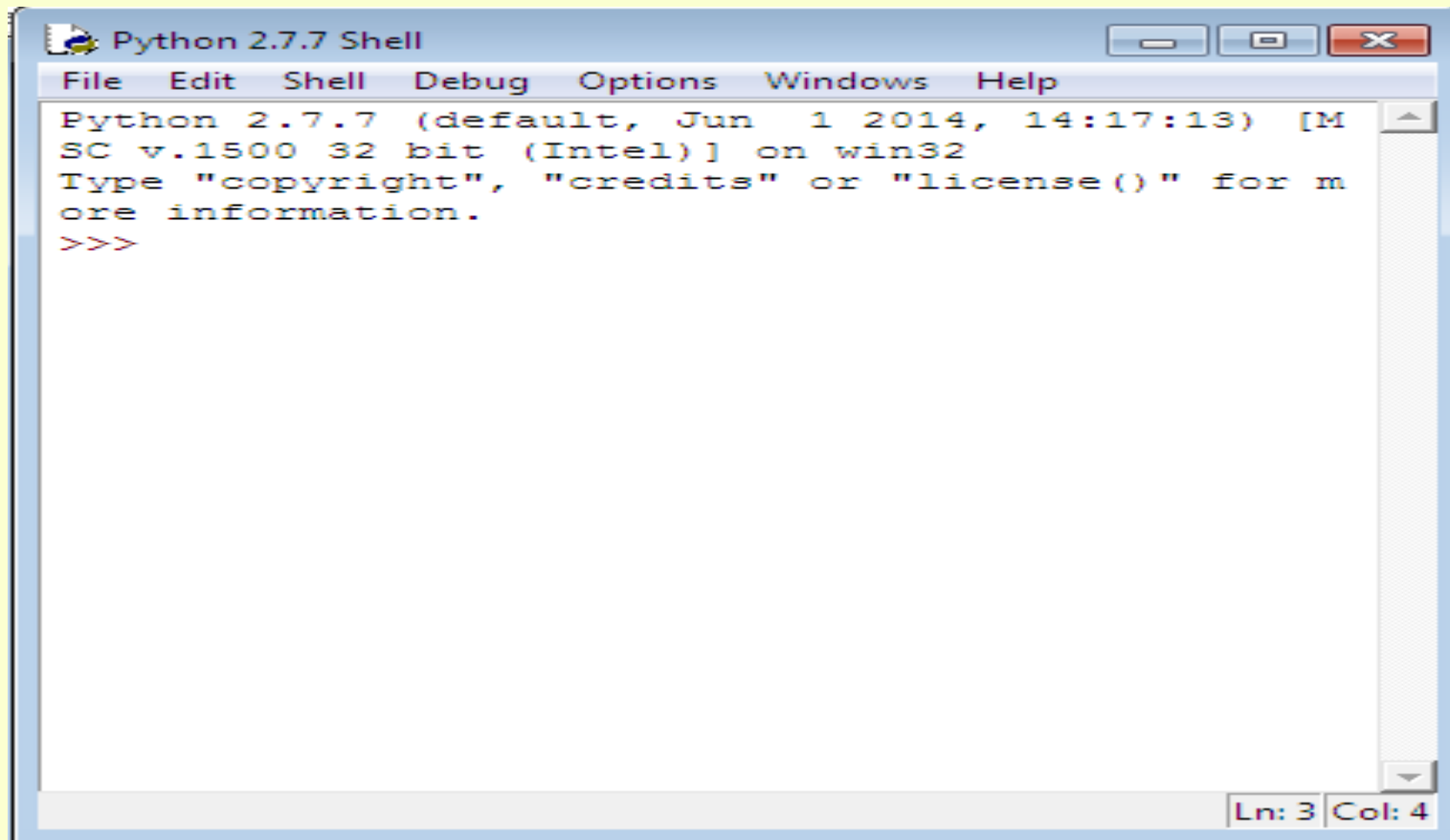*** Search the python.exe file in the drive in which it is installed.**
If found double click it to start python in interactive mode

How to work in Python

* **Click start button -> All programs -> python<version>->IDLE(Python GUI)**
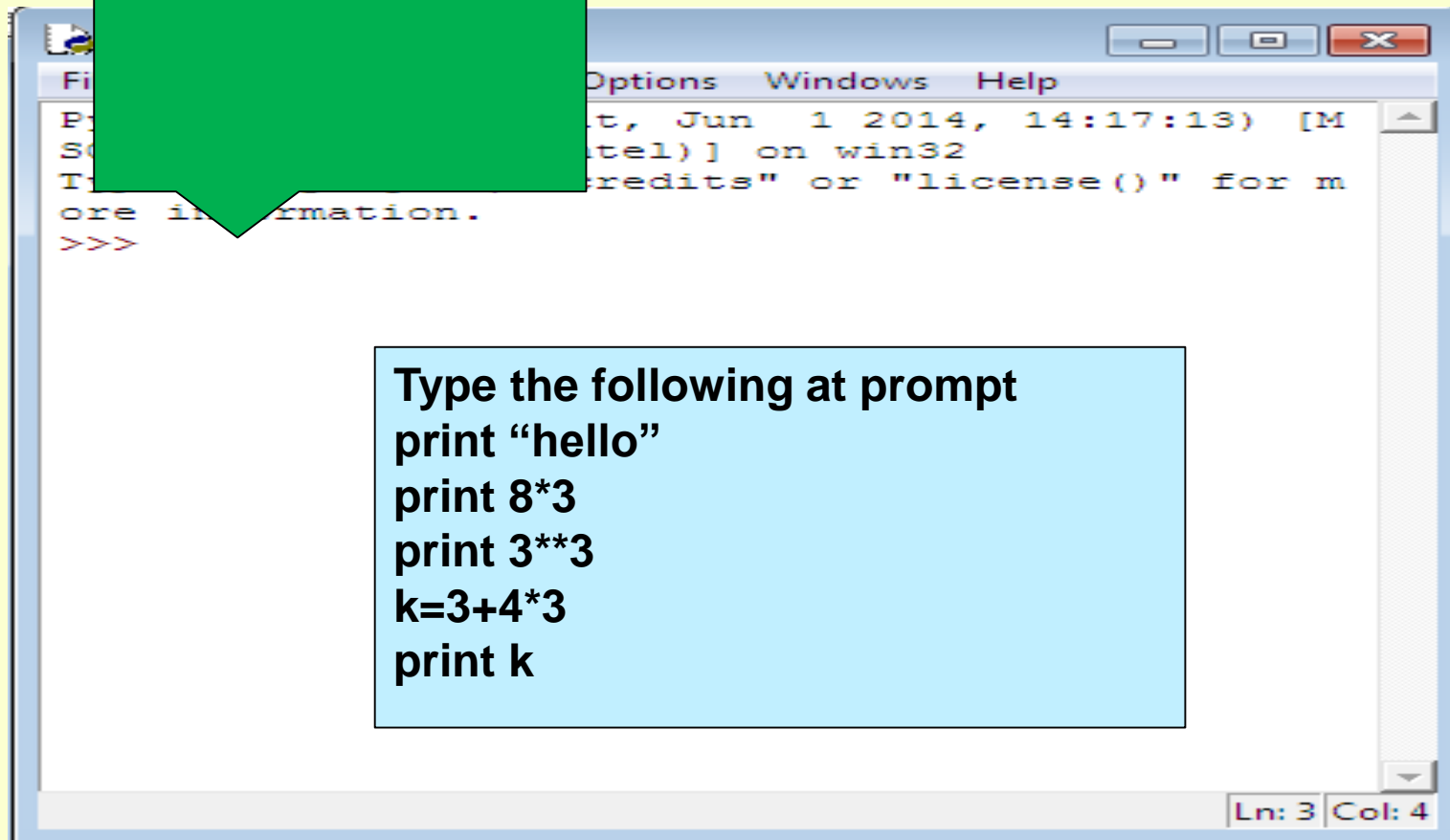
How to work in Python

Python command prompt >>>

```
Python                t, Jun  1 2014, 14:17:13) [M
S                     tel)] on win32
T                     redits" or "license()" for m
ore i  rmation.
>>>
```

File   Options   Windows   Help

Type the following at prompt
print "hello"
print 8*3
print 3**3
k=3+4*3
print k

Ln: 3 Col: 4

How to work in Python

(ii) in Script mode

Step 1 (Create program file)

Below steps are for simple hello world program

**a. Click Start button->All Programs ->
Python<version>->IDLE
b. Now click File->New in IDLE Python Shell
Now type**
print "hello"
print "world"
print "python is","object oriented programming lang."
**c. Click File->Save and then save the file with
filename and .py extension**

How to work in Python

(ii) in Script mode
Step 2 (Run program file)

a.   **Click Open command from IDLE's File menu and select the file you have already saved**

b.   **Click Run-> Run Module**

c.   **It will execute all the commands of program file and display output in separate python shell window**

Note :- Python comes in 2 flavours – python 2.x and python 3.x . Later one is Backward incompatible language as decide by Python Software foundation(PSF). Mean code written in 2.x will not execute on 3.x . Visit the below link for difference between 2.x & 3.x

https://www.geeksforgeeks.org/important-differences-between-python-2-x-and-python-3-x-with-examples/