

Chapter 5 :



Computer Science

**Class XI (As per
CBSE Board)**

**New
Syllabus
2019-20**

An illustration of a laptop computer with a white body and a black keyboard. The screen is open and displays the text "Getting Started With Python" in a bold, red, sans-serif font. The background of the screen is a light orange color. The laptop is positioned in the lower right quadrant of the image, with a perspective view.

**Getting
Started
With
Python**

Visit : python.mykvs.in for regular updates

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 –

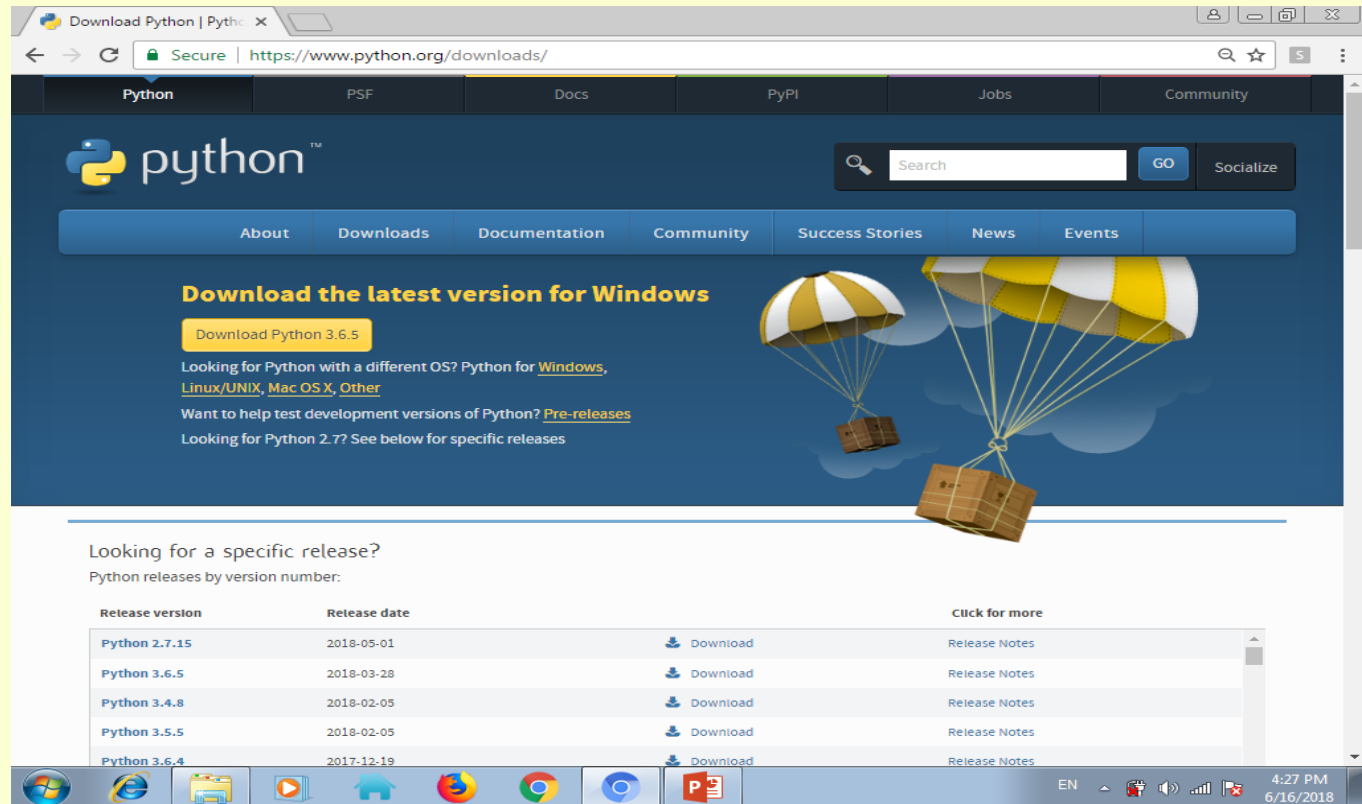
1. Download Python distribution
2. Python installation process

Installing Python

1. Download Python distribution

You can download python distribution from the link given below

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



The screenshot shows the Python.org website's download page. The main heading is "Download the latest version for Windows" with a prominent "Download Python 3.6.5" button. Below this, there are links for other operating systems and pre-releases. A table lists various Python versions with their release dates and download links.

Release version	Release date	Click for more
Python 2.7.15	2018-05-01	Download Release Notes
Python 3.6.5	2018-03-28	Download Release Notes
Python 3.4.8	2018-02-05	Download Release Notes
Python 3.5.5	2018-02-05	Download Release Notes
Python 3.6.4	2017-12-19	Download Release Notes

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

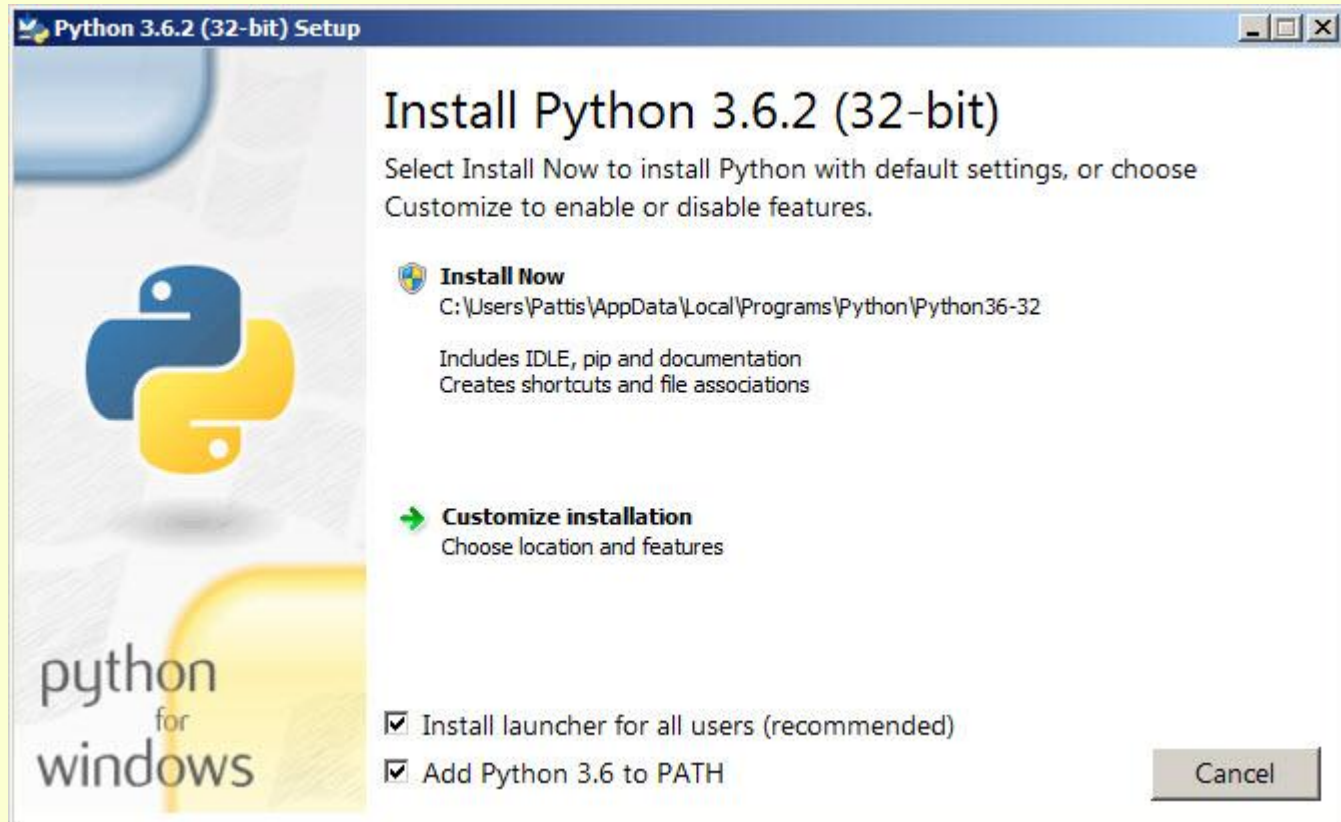
1. Double-click the icon labeling the file **<version>.exe**
Popup window will appear



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

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Installing Python

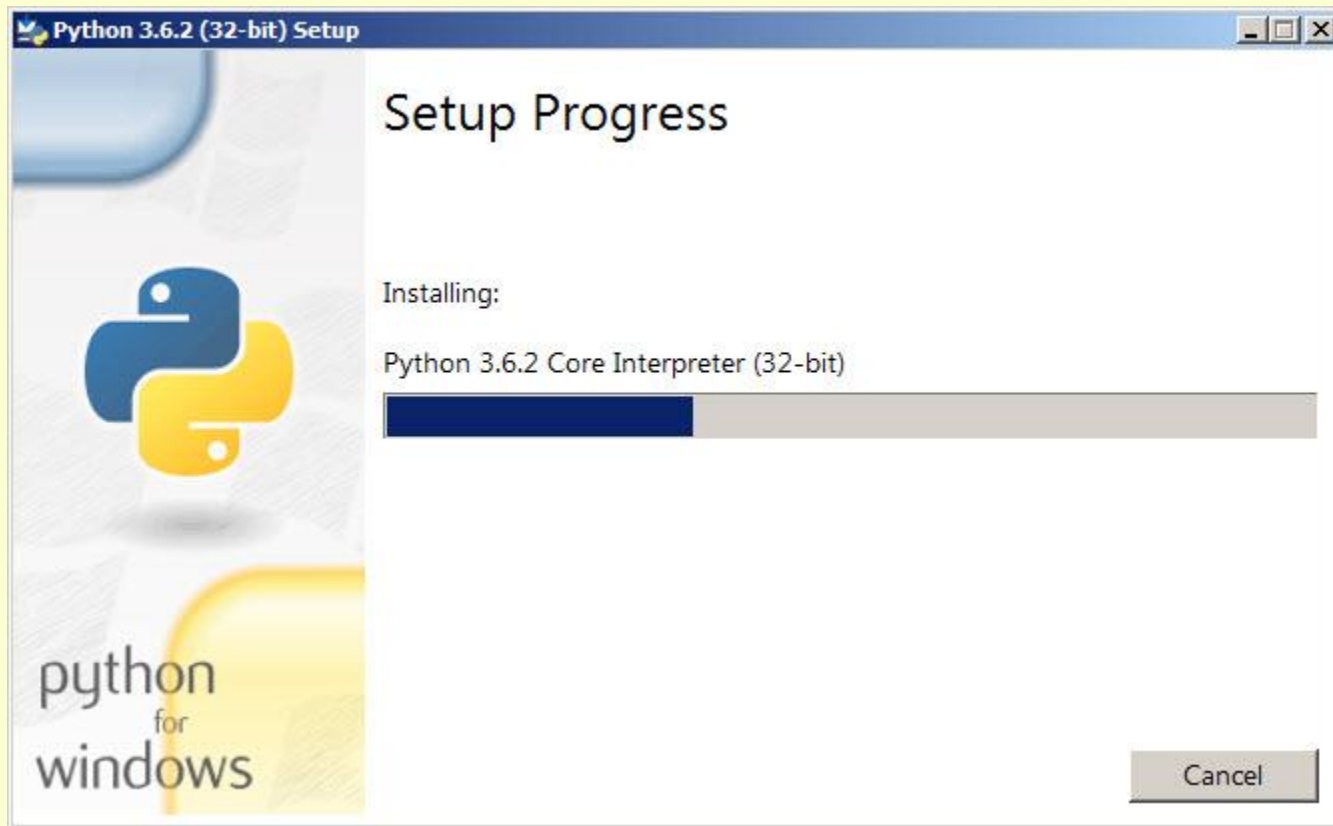
3. **User Account Control** pop-up window will appear



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

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How to work in Python

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

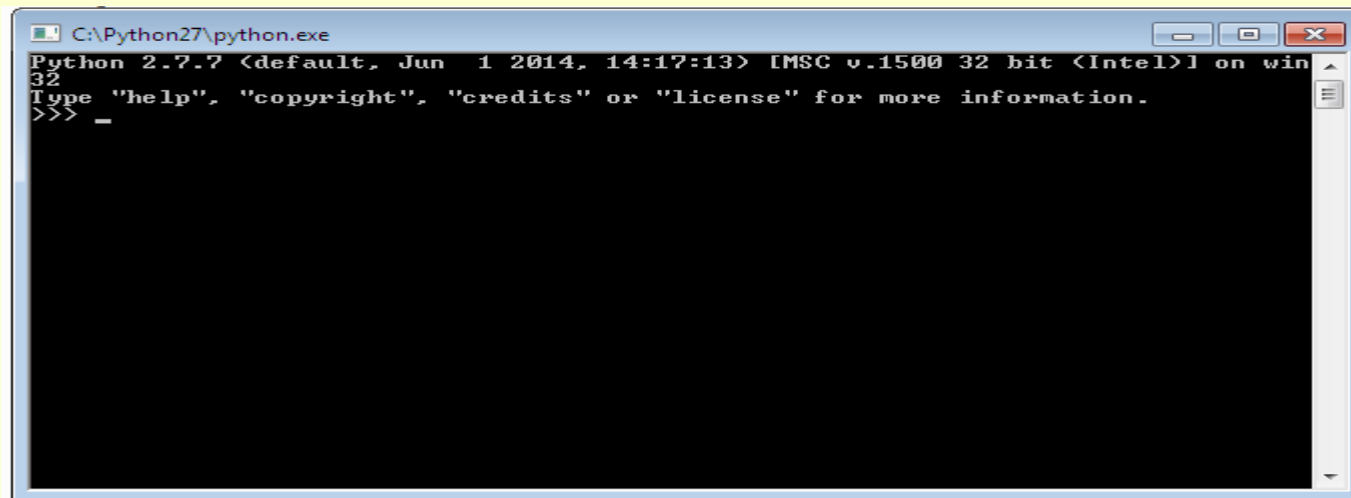
- (i) in Interactive mode
- (ii) in Script mode

How to work in Python

(i) in Interactive mode

* Search the **python.exe** file in the drive in which it is installed.

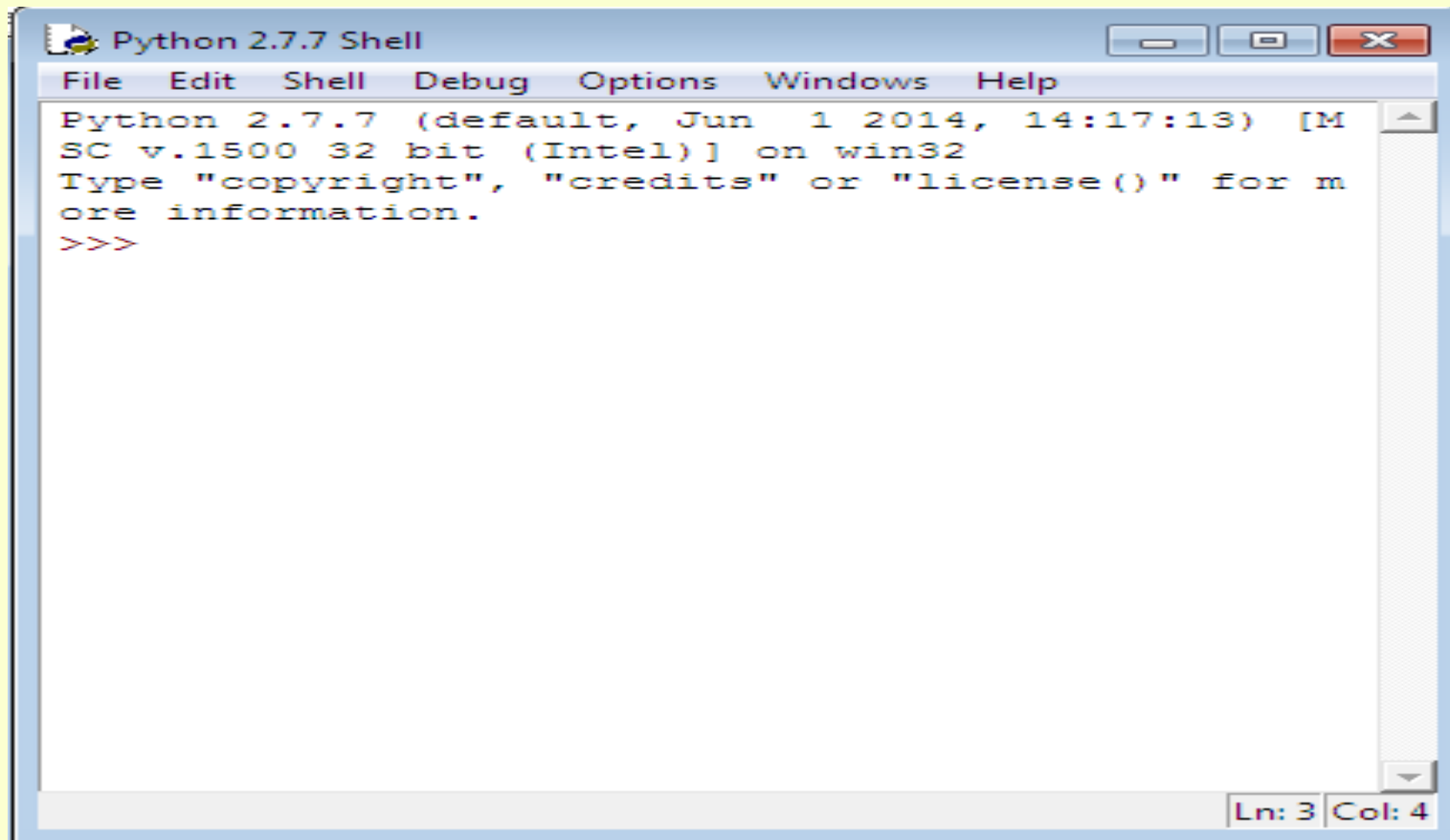
If found double click it to start python in interactive mode



```
C:\Python27\python.exe
Python 2.7.7 <default, Jun  1 2014, 14:17:13> [MSC v.1500 32 bit <Intel>] on win
32
Type "help", "copyright", "credits" or "license" for more information.
>>> _
```

How to work in Python

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

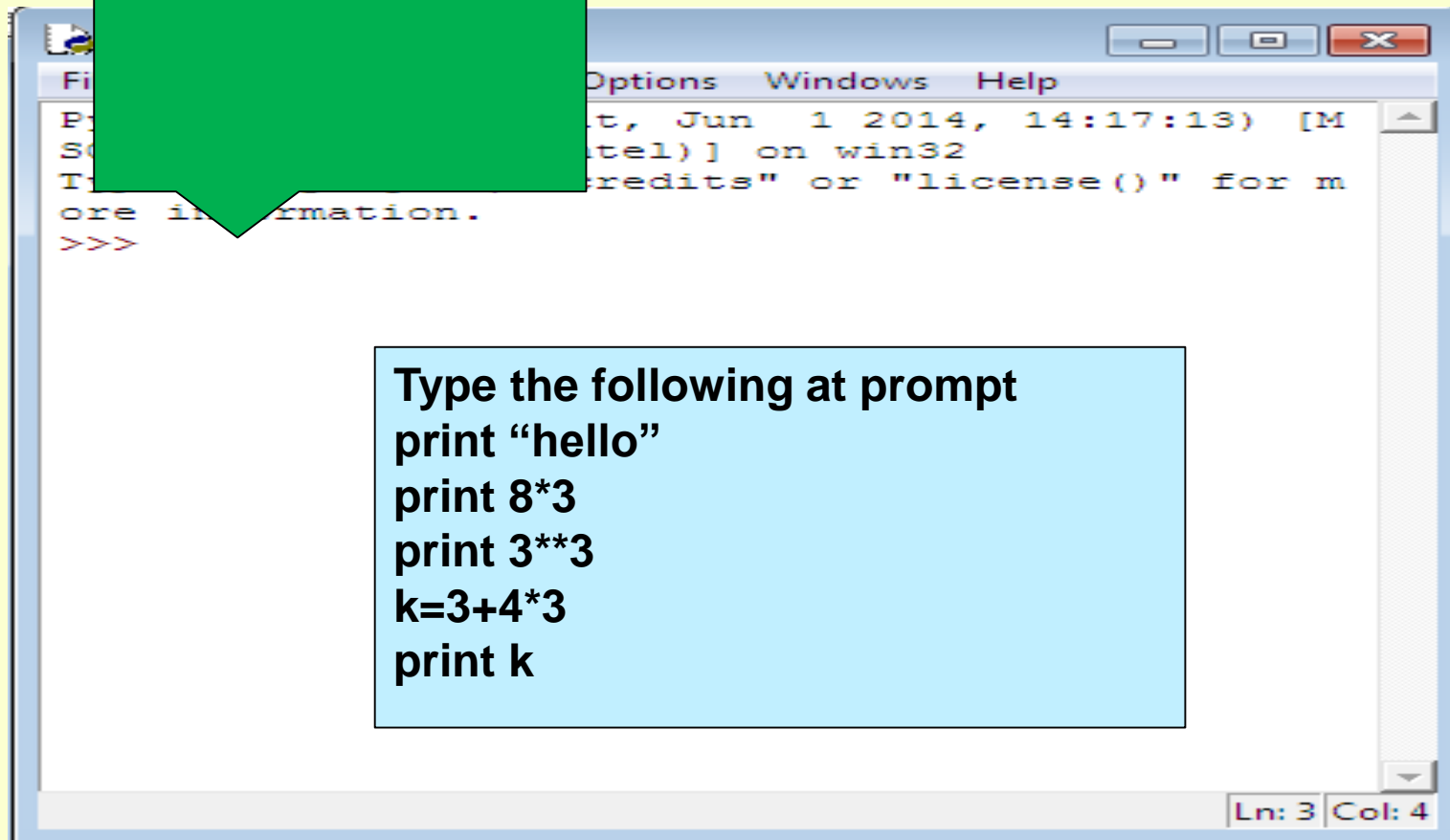


```
Python 2.7.7 Shell
File Edit Shell Debug Options Windows Help
Python 2.7.7 (default, Jun 1 2014, 14:17:13) [MSC v.1500 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
```

Ln: 3 Col: 4

How to work in Python

Python command
prompt >>>



The image shows a screenshot of a Python command prompt window. The window title bar includes 'Options', 'Windows', and 'Help'. The main text area shows the following content:

```
Python 2.7.6 (tags/Python-2.7.6:1574206b, Jun 1 2014, 14:17:13) [AMD64] on win32
Type "credits" or "license()" for more
>>>
```

A blue callout box is overlaid on the prompt, containing the following text:

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

The status bar at the bottom right of the window shows '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/>