

**St. Aloysius S.S.School, Cantt., Jabalpur**

**Class 11 (IP)**

**Unit 1 :**

**Week 2**

**Dated – 06/04/2020**

**Topic : Getting started with Python -**

**Welcome children –**

**No need to purchase any copy separately for these tasks. You can note down the important points in any blank pages and also learn.**

- **Introduction –**

Irrespective of the language being used the first and foremost thing to be done while writing a program is to understand the problem well, analyze it and try to solve it in a logical manner. The process of writing a program is called “Programming”. Thus while writing a program we need to first clearly understand the problem followed by its solution otherwise we will end up writing or inefficient codes.

Programming language have been developed to meet the needs of programmers and individuals. Python is a programming language that has stood the test of time and remained relevant across industries and businesses among programmers and individual users.

- **Python programming language –**

**Python** is an open source object oriented high level programming language which was developed by ROSSUM in 1991 at the National Institute for Mathematics the is presently owned by the Python Foundation (PSF).



GUIDO VAN  
Research  
Netherlands. It  
Software

**Python** is based on the ABC language a teaching language created to replace the BASIC programming language.

- **Features of Python –**

**Python** is an interactive interpreted language with a simple syntax. It is becoming increasingly popular owing to the following features –

- Python is a free open source and portable language having a large repository of libraries.
- It takes less time to develop programs in Python.
- It is an interpreted directly executed language with a pre-compiled code.
- It is extensible and highly efficient as there is no wastage of time in declaring the types of variables or arguments.
- It is easily compatible with other languages like C, C++, Core Java, etc.
- It is used for both scientific and non-scientific programming.

**(learn at least 4 or 5 of the features)**

- **Advantages of Python –**

Python offers the following advantages –

- Platform-independent : It can run across different platforms like Window, Linux/Unix, Mac OS X and other Operating systems.
- Readability : Python uses clear, simple, concise and English like instructions that are easy to read and understand even by non-programmers or people.
- Object-oriented language: It is an interactive, interpreted and object oriented programming language.
- Less Learning Time: It is a simple language with small codes and extensive libraries it offers higher productivity to programmers as compared to languages like C++ and Java.
- Gui Programming : Python supports GUI applications that can be created and ported to many system calls, libraries and windows systems.
- Ample Availability of Libraries : Python provides large standard libraries to solve a task.

**(learn at least 4 or 5 of the advantages)**

- **Installing Python -**

**We** shall be working on Python 3.6.5 version. To install Python use the link/URL given

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

Once you have downloaded the python file. Install it and run the executable file.

- **Python shell –**

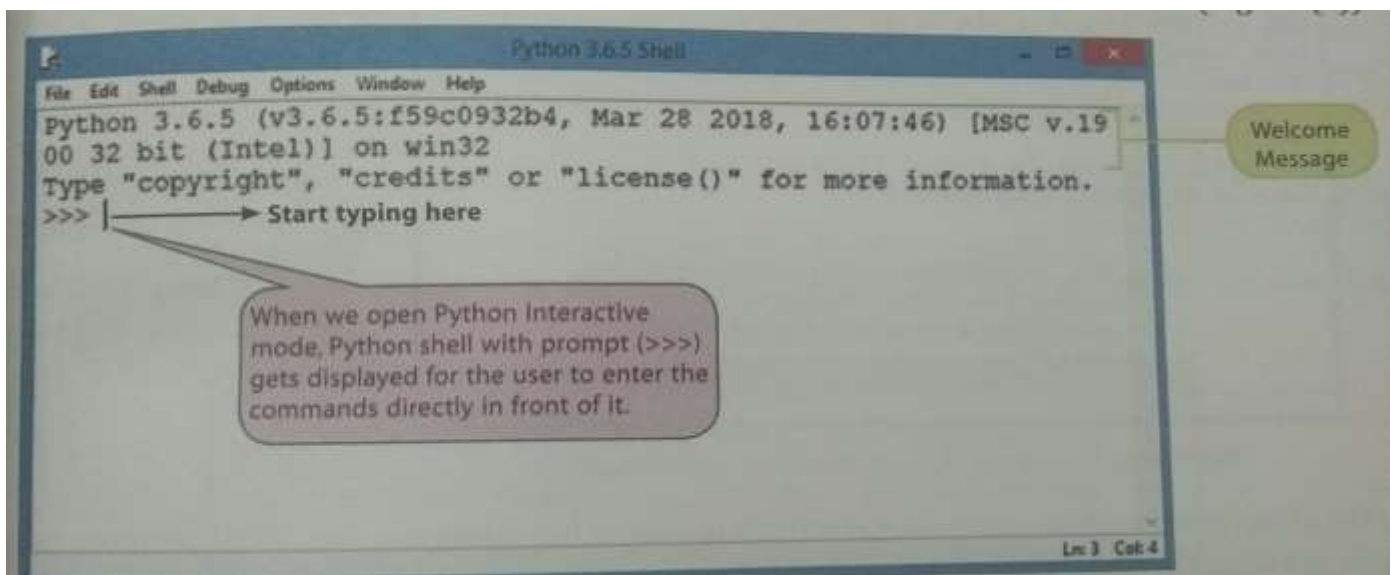
When you first start Python IDLE by clicking on its icon created on the desktop or menu item on the START MENU -> APPS BY NAME -> IDLE (PYTHON 3.6 32 BIT) option, it always starts up in the shell.

There are two ways to use the commands in Python

1. Command line interactive mode
2. Script mode

The first one allows you to directly type the command and immediately see the result the moment you press enter key after typing the command or statement.

This will be seen for the Interactive mode in a separate window



- Interactive Python Shell

- **My first statement in Python –**

- **Against the >>> symbol type**

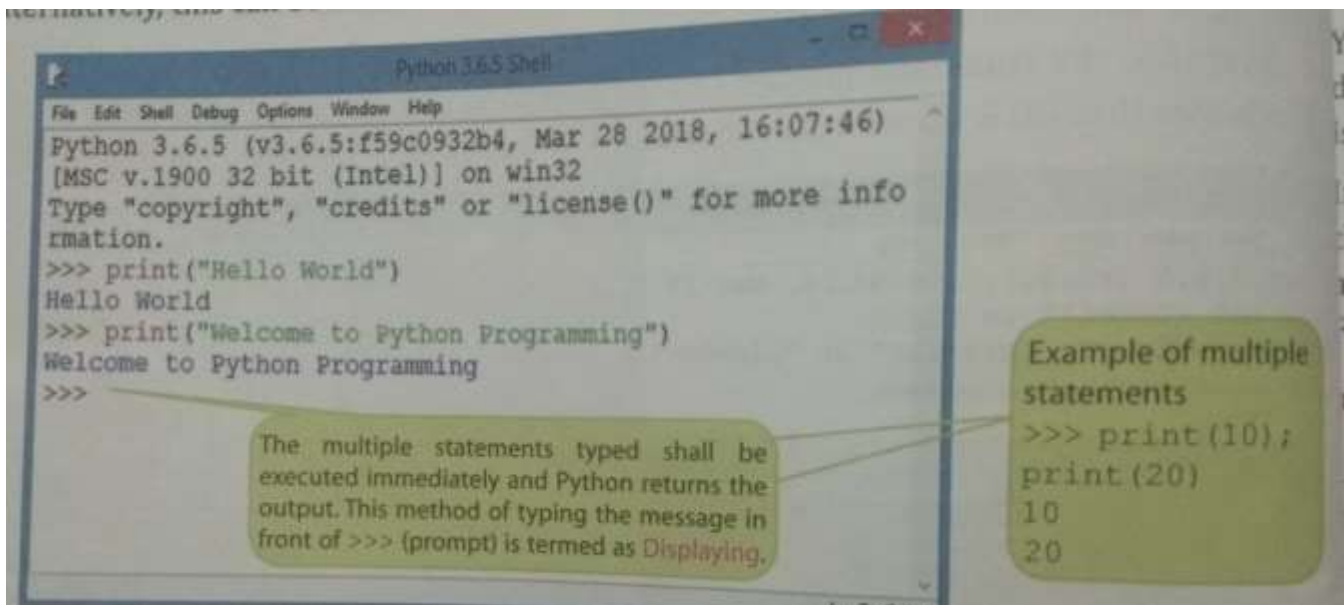
```
>>> print("Hello World")
```

**Hello World**

The moment you press enter key after typing your statement you will see the result just below it.

This is Command line Interactive mode.

Displaying multiple messages –

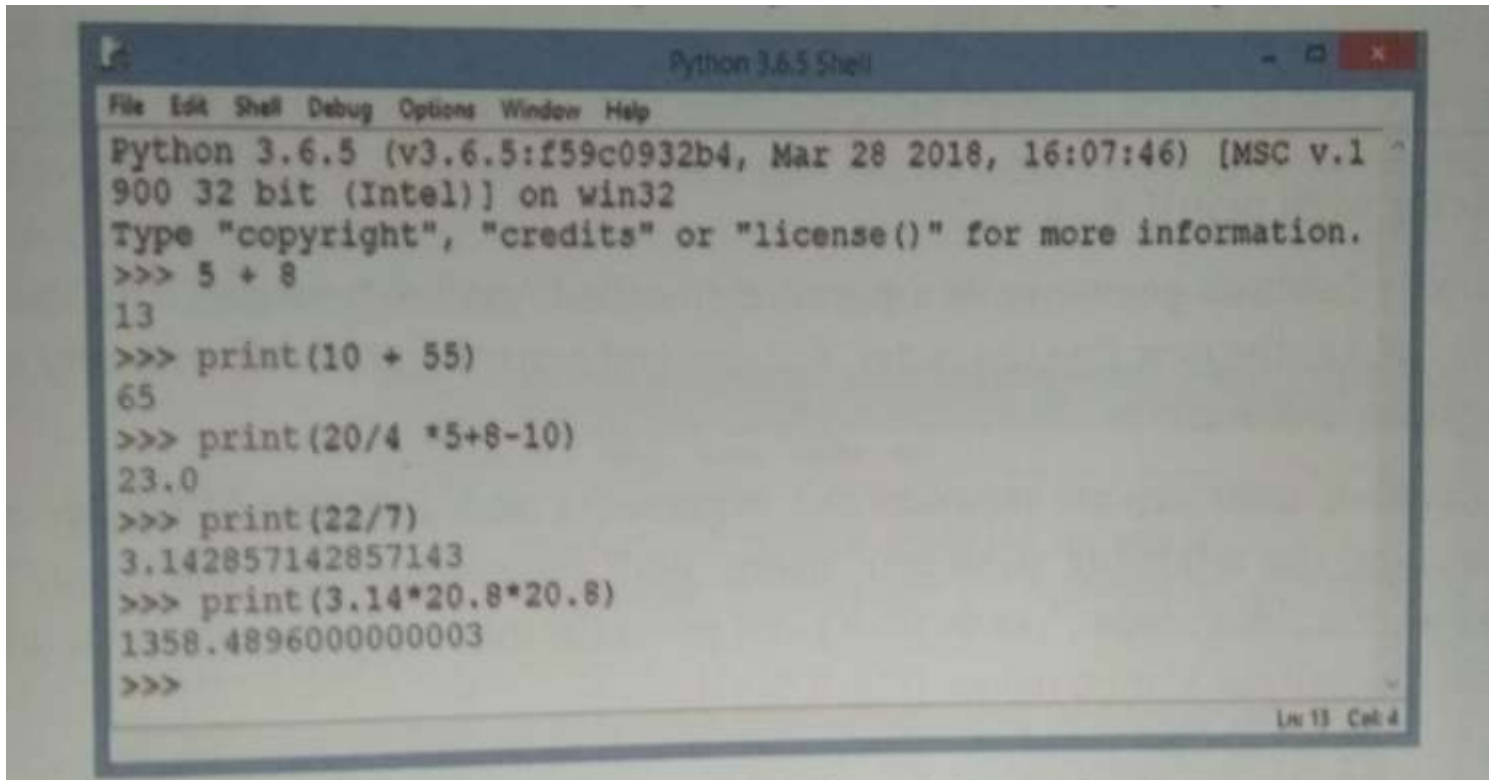


Python is case sensitive language – This means that there is a difference between Print and print. This will create a problem if we do not type print as instructed.

You can use single or double quotation marks with message in print()  
Which means "Hello World" or 'Hello World' both means the same.

- **Practical Implementation –**

Using IDLE as a Calculator just like text/string messages we have given so far, we can also perform mathematical calculations using the Python command prompt.

A screenshot of a Python 3.6.5 Shell window. The window title is "Python 3.6.5 Shell". The menu bar includes "File", "Edit", "Shell", "Debug", "Options", "Window", and "Help". The main text area shows the following output:

```
Python 3.6.5 (v3.6.5:f59c0932b4, Mar 28 2018, 16:07:46) [MSC v.1900 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>> 5 + 8
13
>>> print(10 + 55)
65
>>> print(20/4 *5+8-10)
23.0
>>> print(22/7)
3.142857142857143
>>> print(3.14*20.8*20.8)
1358.4896000000003
>>>
```

The status bar at the bottom right indicates "Ln 13 Col 4".

### Evaluating Arithmetic Expressions

As shown in the above code window we have performed mathematical calculations using print() statement as well as by directly typing the command without the use of print() command. In either of the cases, these statements are immediately executed by the Python interpreter and the output is displayed within a fraction of a second.

Syntax of print() function :

print (value, .... , sep=' ', end ='\n' , file = sys.stdout)

sep : sting inserted between values, default , a space.

end : string appended after the last value default , a new line.

```

Python 3.65 Shell
File Edit Shell Debug Options Window Help
Python 3.6.5 (tags/v3.6.5:2019.08.29, Intel) on win32
Type "copyright", "credits" or "license()" for more informatio
n.
>>> print(10,20,30) } Space is the default separator
10 20 30
>>> print(10,20,30,sep="*") } * as separator
10*20*30
>>> print(10,20,30,sep="--*--") } --*-- as separator
10--*-20-*--30
>>> print(10,20,30,sep=', ') } , as separator
10, 20, 30
>>> print(10,20,30,sep='\n') } '\n' (newline character) as separator
10
20
30
>>> print(10,20,30,sep='\t') } '\t' (tab) as separator
10      20      30
>>>
Ln: 17 Col: 4

```

### Use of 'sep' with print()

If we use the sep argument to specify the separator then it must be specified after all the values to be printed. Otherwise the interpreter shows a syntax error. An example –

```
>>> print (10,11, 12 , sep = '*' , 40)
```

Syntax Error : positional argument follows keyword argument

### More about Python Shell

The Python Shell Window (as shown in Fig. 2.5(a)) comprises drop-down menus and a Python command prompt (>>>) where you can type or enter statements or expressions to be executed. It is quite different as compared to others in the way that it allows to scroll back to previous commands, to cut, copy and paste earlier commands/statements and to modify them.

The Python shell window has the following menu items: File, Edit, Shell, Debug, Options, Windows, and Help.

The **Edit menu** allows you to edit the text you type in the shell by applying various editing options such as Undo, Redo, Cut, Copy, Select All, Paste, Find and Replace.

The Shell and Debug menus are useful when creating larger programs. The **Shell menu** allows you to restart the shell or search the shell's log to trace the most recent reset. The **Debug menu** provides useful menu items for debugging the Python program in order to trace errors while checking for line-by-line execution of the entered Python statements.

The **Options menu** allows the user to configure IDLE according to the suitability and working requirements.

The **Help option** provides Python Help and documentation.

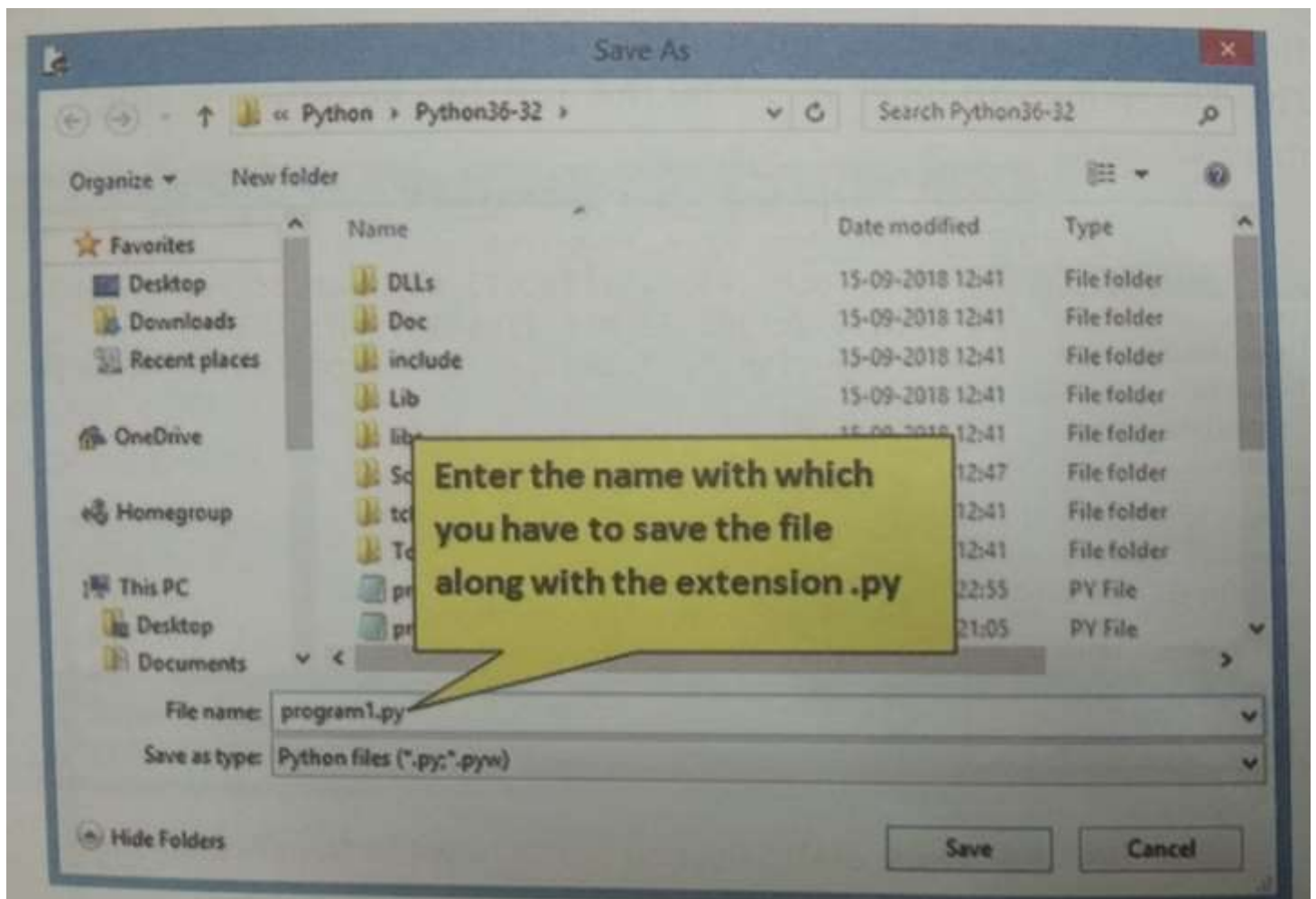
- **Python Editor Window (Working in Script Mode) –**

Till now we were working in the interactive mode and there was no provision to type all the commands and test them together.

This limitation can be overcome by working in the Python script mode where we can save the commands we are typing. This switchover is carried out through Python shell itself.

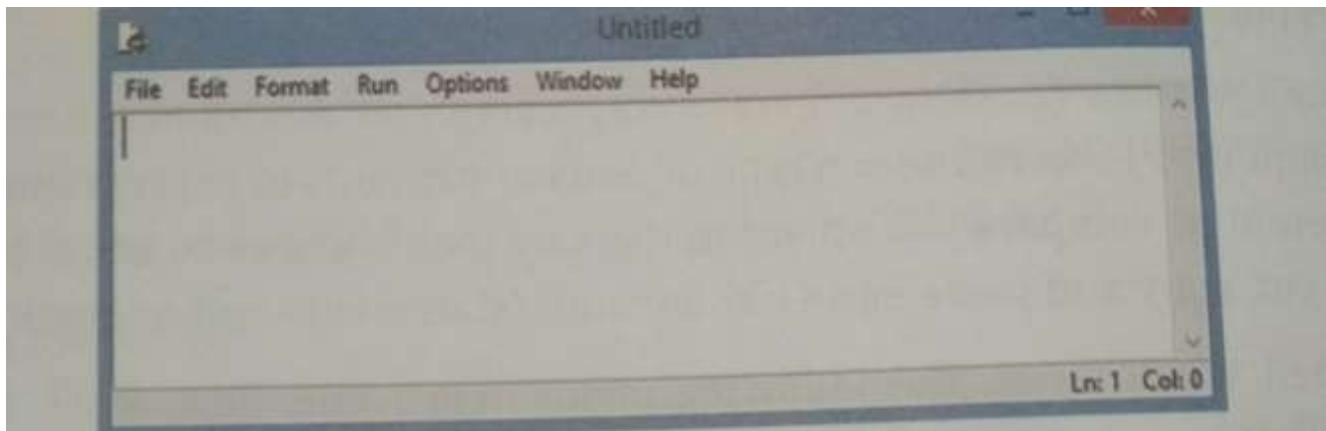
- The file Window/option provides an option to create a new file or open the previous existing file . When you click on the “New File” option a new window opens up where we can type all our commands one below the other. This is the Python Editor window.

It is the text editor for Python. After creating **your program** save it and give the extension of the file .py (compulsory).

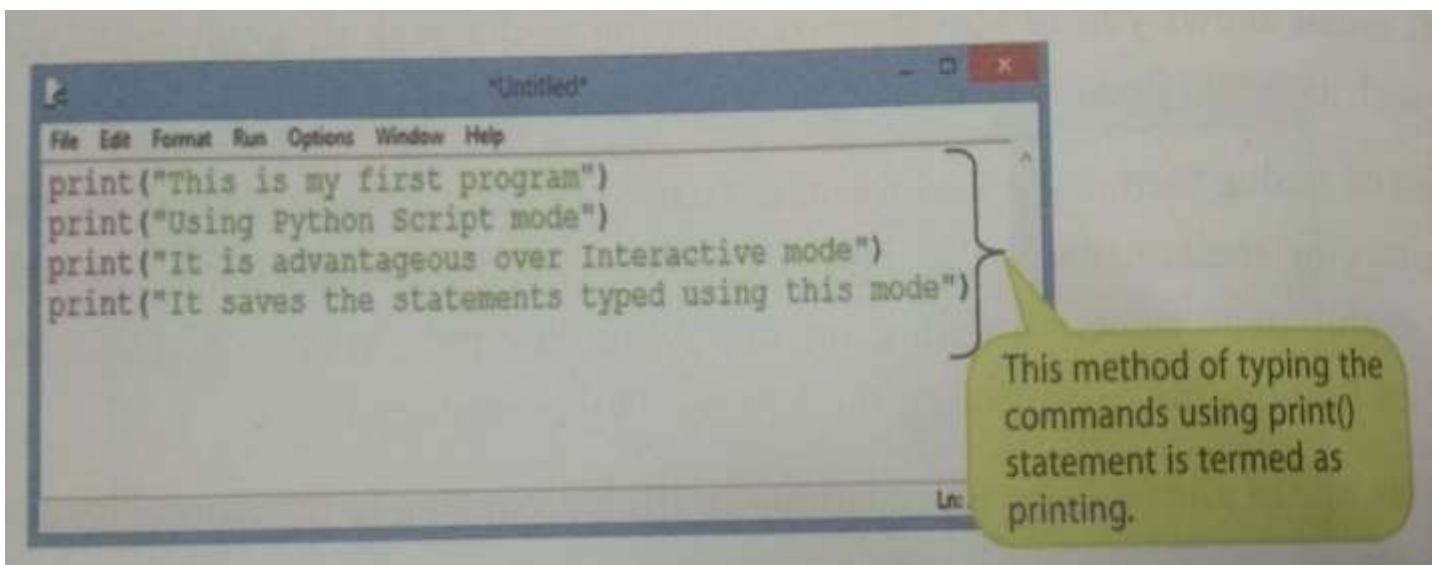


Selecting File -> New File from Python Shell



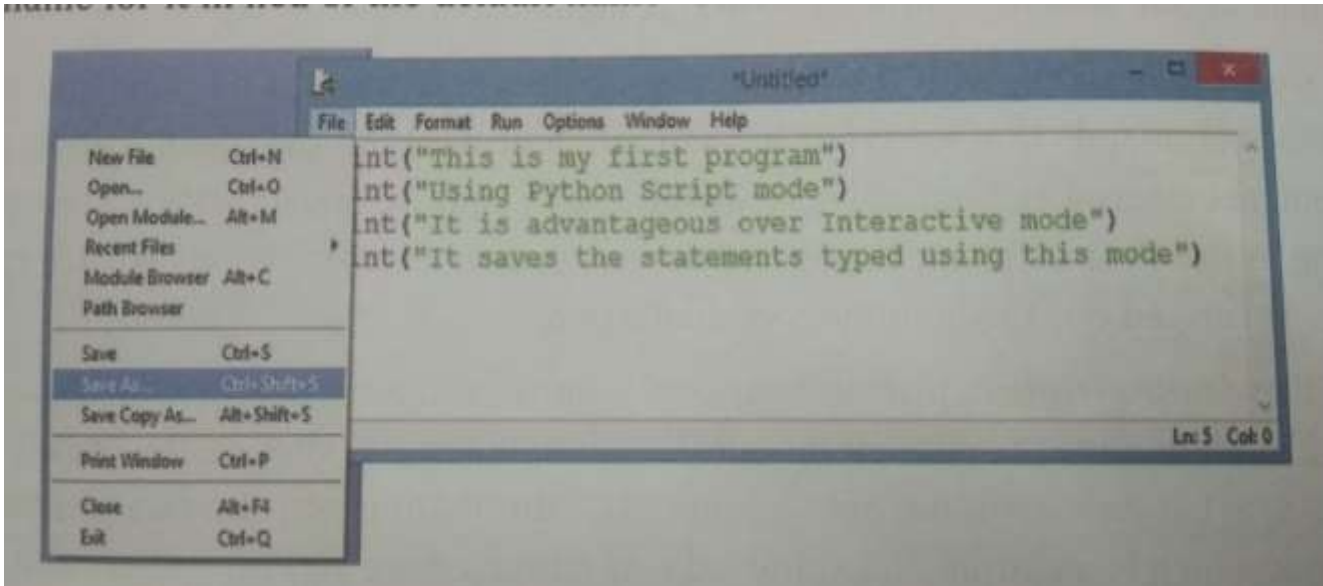


Python Editor (Script Mode) gets Opened



Type the commands in the New Blank File (Script Mode)

- Our next step is to save this file by clicking on File Menu-> Save As option, followed by typing a proper name for it in lieu of the default name "Untitled".

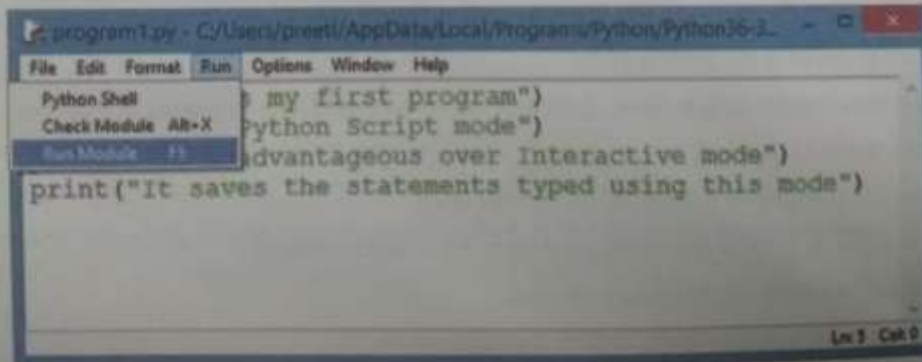


Save your file with extension .py

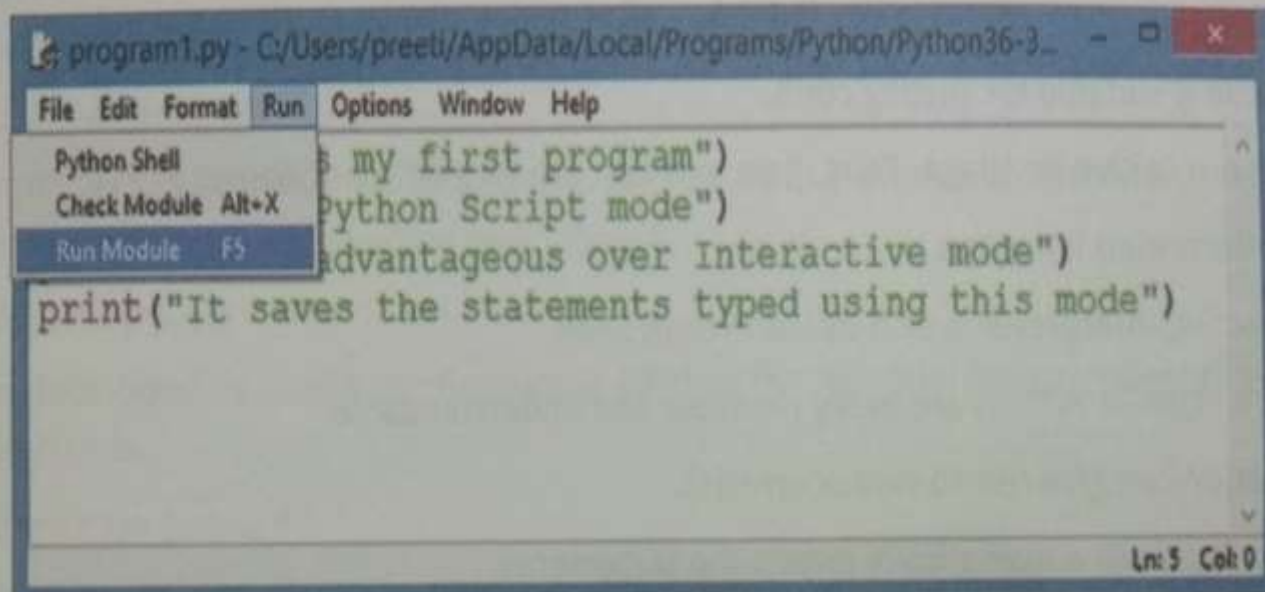
If you do not give the extension to you file for the first time the Python

### More About the Script Mode

While working in the script mode, when you enter the statements to be executed and press Enter key, you won't automatically see the results the way you would see in the Interactive mode. To see output from a script mode, you have to run this script and/or invoke the print() function.



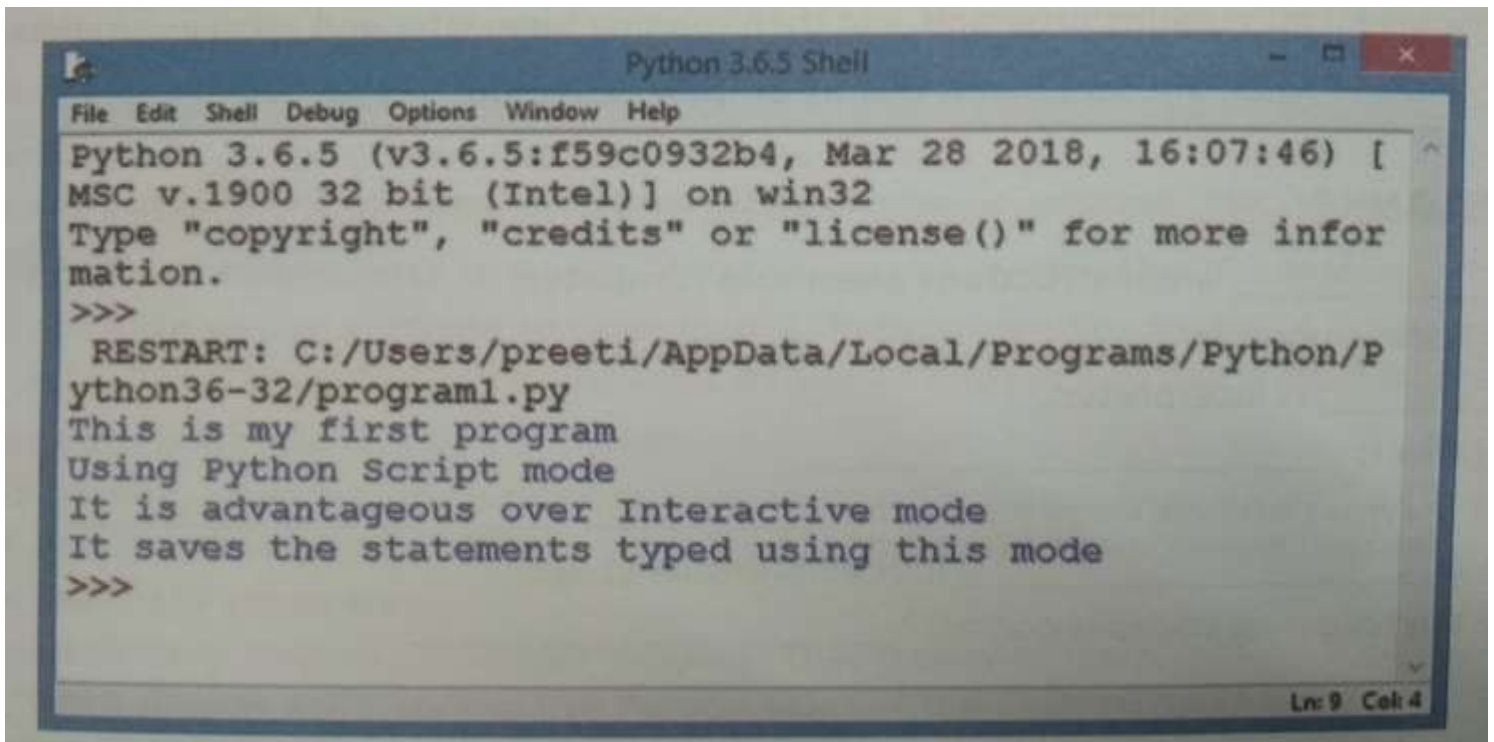
```
program1.py - C:/Users/preeti/AppData/Local/Programs/Python/Python36-3...  
File Edit Format Run Options Window Help  
Python Shell  
Check Module Alt+X  
Run Module F5  
print("my first program")  
print("Python Script mode")  
print("Script mode is more advantageous over Interactive mode")  
print("It saves the statements typed using this mode")  
Ln: 5 Col: 0
```



```
program1.py - C:/Users/preeti/AppData/Local/Programs/Python/Python36-3...  
File Edit Format Run Options Window Help  
Python Shell  
Check Module Alt+X  
Run Module F5  
print("my first program")  
print("Python Script mode")  
print("Script mode is more advantageous over Interactive mode")  
print("It saves the statements typed using this mode")  
Ln: 5 Col: 0
```

Interpreter give the extension along with the file name automatically.

Running the File

A screenshot of a Windows command prompt window titled "Python 3.6.5 Shell". The window has a menu bar with "File", "Edit", "Shell", "Debug", "Options", "Window", and "Help". The main content area shows the following text:

```
Python 3.6.5 (v3.6.5:f59c0932b4, Mar 28 2018, 16:07:46) [
MSC v.1900 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more infor
mation.
>>>
  RESTART: C:/Users/preeti/AppData/Local/Programs/Python/P
ython36-32/program1.py
This is my first program
Using Python Script mode
It is advantageous over Interactive mode
It saves the statements typed using this mode
>>>
```

The status bar at the bottom right shows "Ln: 9 Col: 4".

Output of the Program Displayed inside Python Shell

It must be remembered that even if we enter the print ( ) statements in the script mode the output will be displayed only in the Python shell.

- **Exiting Python –**

- In order to exit the Python command prompt , click Ctrl + Z and press Enter key or type quit( ) or exit() function/statement and press Enter Key.

Just for knowledge –

If exit ( ) or quit ( ) does not work, then alternatively you can type the following commands :

```
import sys;
sys.exit( )
```

(If you are confused by this , ignore these commands)

Conclusion –

To start with Python you need to install the Interpreter.

Start the Interpreter from the place where it is downloaded to run it.

Experiment with the initial things mentioned in the study material given above.

Try step by step and see the result.

But carefully see the screen displayed above.

Most important what we have studied is the print( ) statement/command.

Write few of your own statement with print ( )

You can use as many print( ) one below the other to print more of the messages.

Example in script mode –

```
print ("Hello world")  
print ("Cannot help it")  
print ("we are in a lockdown")  
print ("situation")  
print ("but God has")  
print ("saved us all")  
print ("BYE")
```

Output – Guess it .

Every message inside quotations , will be in the next line  
when a new print ( ) is used.

Could you guess now ????!!!!!!!

\*\*\*\*\*End \*\*\*\*\*