

PYTHON PROGRAMMING LANGUAGE

PYTHON:

- Python is an open source object oriented high level programming language developed by Guido Van Rossum in 1991 at the National Research Institute of Mathematics Netherlands.
- It is presently owned by python Software Foundation(PSF)
- Python is based on the ABC language,a teaching language created to replace the programming language BASIC.
- Python is a general purpose programming language that can be used effectively to build any kind of programme that doesnot require direct access to the computers Hardware.

FEATURES OF PYTHON::

- Python is interpreted,interactive,directly executed with pre-compiled code,this means that it is processed at runtime by the interpreter and you need not compile your programme before executing it.
- It is loosely typed object oriented programming language.
- It is free open source and portable language.
- It takes less time to developers python programmes are typically 3-5 times shorter than java programmes.
- It is extensible there is no wastage of time in declaring the type of variables/arguments.
- It supports GUI and garbage collection(better memory management)
- It can be easily compatible with other languages like c,c++,corejava.
- It is used for both scientific and non scientific programmes.

ADVANTAGES OF PYTHON:

- It is platform independent
- It is readability
- It is object oriented language.
- It is higher productivity.
- It is less learning time
- It is GUI programming.
- It is syntax highlighting.

INSTALLING PYTHON:

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

PYTHON IDLE(INTEGRATED DEVELOPMENT LEARNING ENVIRONMENT)

- Python is flexible ,dynamic powerful language can be used in different ways.
- It is being widely used for system programming.GUI programs,internet scripting/web,gaming,text processing network programs,commercial robots.
- IDLE is a simple Integrated development learning environment that comes with python.
- It is a programme that allows the users to edit,run browse and debug a python programme for a single interface.

PYTHON SHELL:

Start python clicking on its icon created on the desktop or menu item

Start menu->Apps by name->IDLE(python 3.6 32 bit)

It always starts up in the shell.On opening python shell shows a welcome message displaying its version and a copyright notice.

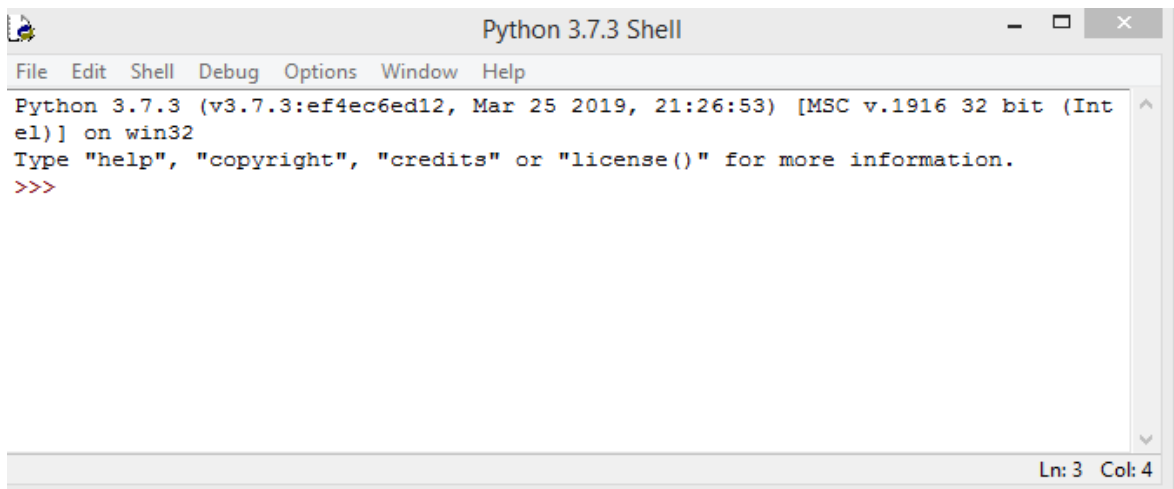
After this the command prompt(>>>) followed by a blinking cursor gets displayed.

The three greater than signs (>>>) are called the prompt or python command prompt.

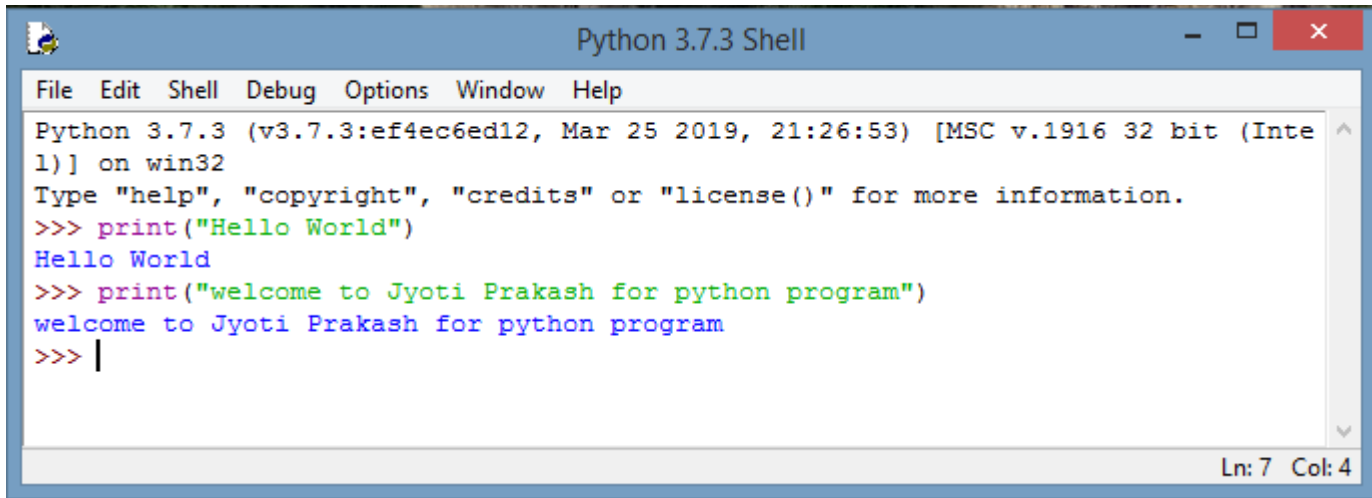
COMMAND LINE INTERACTION:

- When commands are entered directly in IDLE from the keyboard the interpreter/IDLE is said to be an interactive mode.
- In interactive mode type the command “Hello world”infront of the prompt(>>>) and press enter.
- print() is a function which is used to display the specified content on the screen.
- The content(called argument)is specified within the parenthesis.

PRACTICAL :



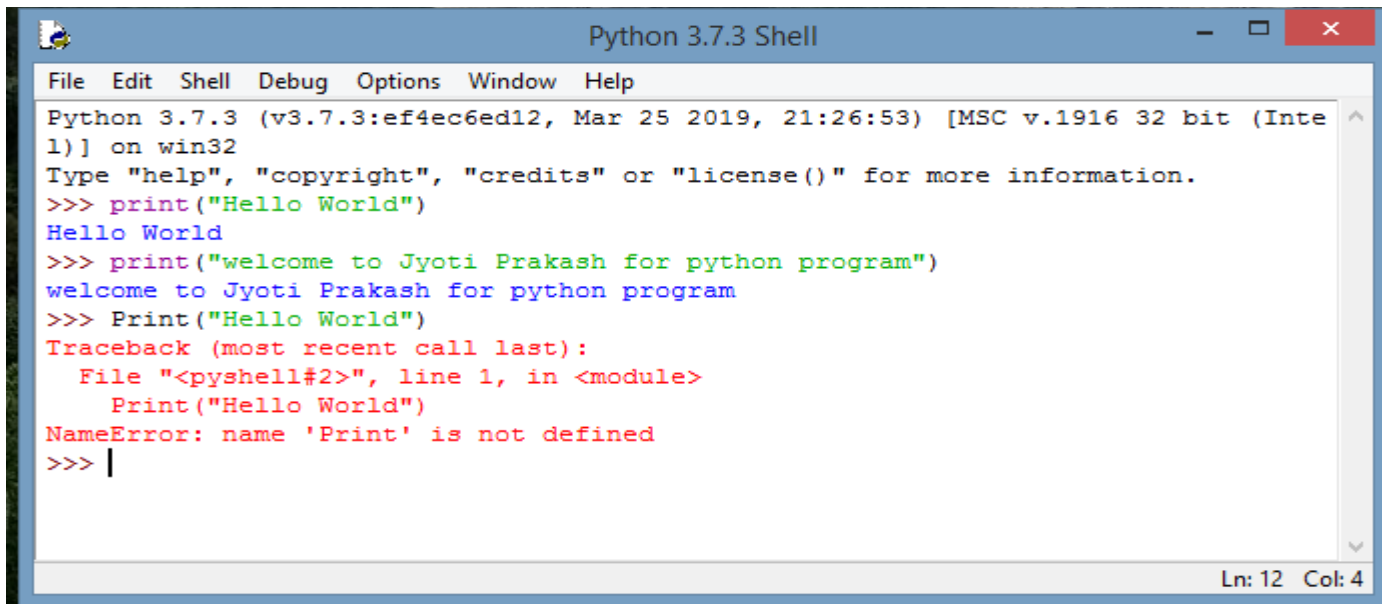
As soon as we press the Enter key after typing our first statement, it gets immediately executed and the output is displayed then and there. This can be done using the `print()` function



```
Python 3.7.3 Shell
File Edit Shell Debug Options Window Help
Python 3.7.3 (v3.7.3:ef4ec6ed12, Mar 25 2019, 21:26:53) [MSC v.1916 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> print("Hello World")
Hello World
>>> print("welcome to Jyoti Prakash for python program")
welcome to Jyoti Prakash for python program
>>> |
```

Ln: 7 Col: 4

Python is a case sensitive language. This means that python differentiates between capital and small alphabets

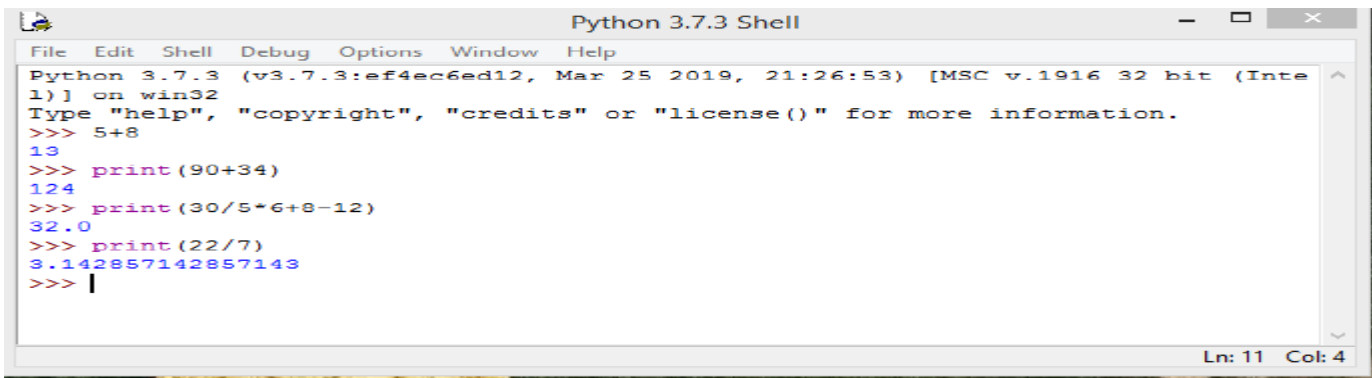


```
Python 3.7.3 Shell
File Edit Shell Debug Options Window Help
Python 3.7.3 (v3.7.3:ef4ec6ed12, Mar 25 2019, 21:26:53) [MSC v.1916 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> print("Hello World")
Hello World
>>> print("welcome to Jyoti Prakash for python program")
welcome to Jyoti Prakash for python program
>>> Print("Hello World")
Traceback (most recent call last):
  File "<pyshell#2>", line 1, in <module>
    Print("Hello World")
NameError: name 'Print' is not defined
>>> |
```

Ln: 12 Col: 4

**** We must remember that while using the `print()` command, the message or the argument to be displayed should be placed within quotation marks (single ‘ ‘ or double “ ”), then the argument is displayed.**

If the argument is not placed within quotation marks then the interpreter tries to evaluate the argument and displays the result. This feature is used to perform calculation.



```

Python 3.7.3 (v3.7.3:ef4ec6ed12, Mar 25 2019, 21:26:53) [MSC v.1916 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> 5+8
13
>>> print(90+34)
124
>>> print(30/5*6+8-12)
32.0
>>> print(22/7)
3.142857142857143
>>> |

```

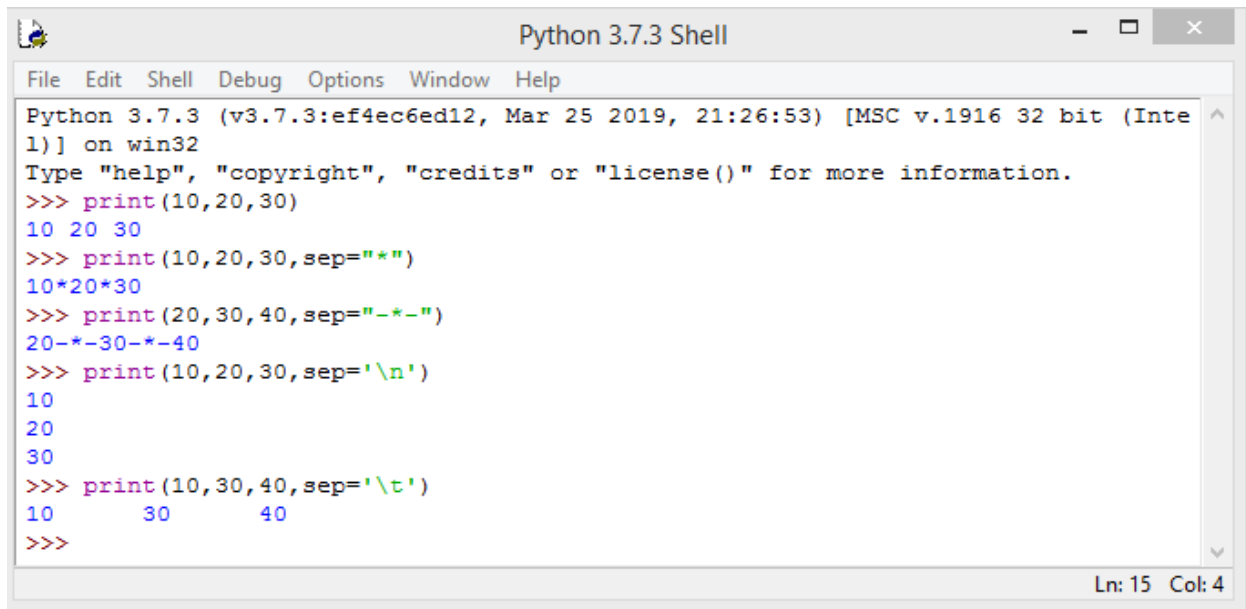
- Consecutive arguments are separated by commas in print() function when print() is executed the values of consecutive arguments are separated by space between them.
- Space is a default **Separator values** in the output.
- We can also specify some other string as the separator using the **Sep** argument of print() function.

SYNTAX OF print () function:

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

sep:String inserted between values default a space.

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



```

Python 3.7.3 (v3.7.3:ef4ec6ed12, Mar 25 2019, 21:26:53) [MSC v.1916 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> print(10,20,30)
10 20 30
>>> print(10,20,30,sep="*")
10*20*30
>>> print(20,30,40,sep="-*-")
20-*-30-*-40
>>> print(10,20,30,sep='\n')
10
20
30
>>> print(10,30,40,sep='\t')
10      30      40
>>>

```

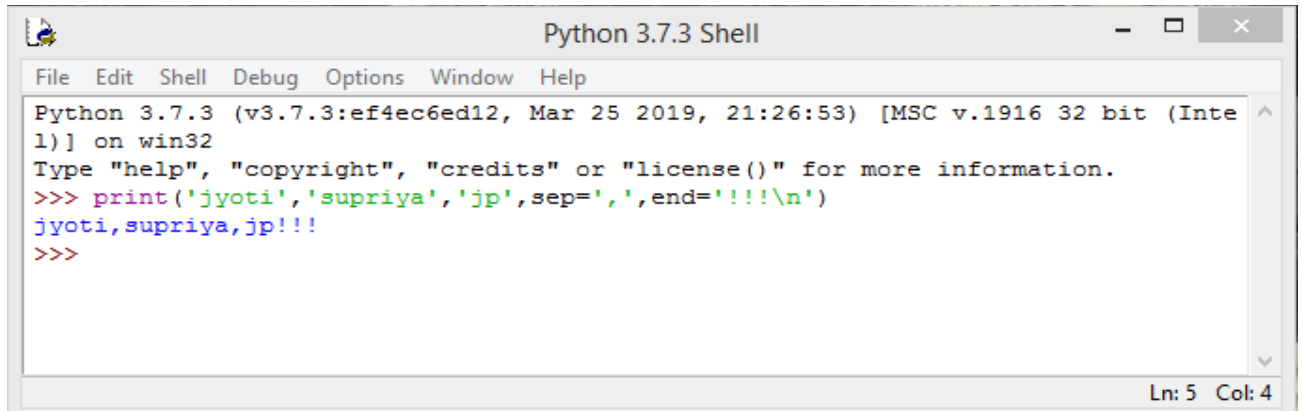
If we use the sep argument to specify the separator then it must be specified after all the values to be printed otherwise the interpreter shows a syntax error.

e.g:

```
>>>print(10,20,40,sep='*',50) }syntax error
```

end PARAMETER WITH print()

Python print() function comes with a parameter called 'end'.By default the value of this parameter is '\n' i.e the new line character.



```
Python 3.7.3 Shell
File Edit Shell Debug Options Window Help
Python 3.7.3 (v3.7.3:ef4ec6ed12, Mar 25 2019, 21:26:53) [MSC v.1916 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> print('jyoti','supriya','jp',sep=',',end='!!!\n')
jyoti,supriya,jp!!!
>>>
```

MORE ABOUT PYTHON SHELL:

- 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 means are useful when creating larger programs.
- The shell menu allows you to restart the shell or search the shells log to trace the most recent reset.
- The debug menu provides useful menu items for debugging the python programme in order to trace errors while checking for line by line execution of the entered python statements.

PYTHON EDITOR WINDOW:

- The file window/option provides various options to create a new file,open an existing file.Open a module save the current module/session.
- Click on the NEW FILE option a new window gets opened.i.e python script mode or python Editor window which is a standard text editor.
- Next stop to save this file by clicking on file menu->save as option followed by typing a proper name.
- If you forget to give the extension.py or .pyw while saving your file for the first time,the python compiler automatically gives the extension along with the file name.

EXITING PYTHON:

In order to exit the python command prompt click ctrl+z and press enter key or type quit() or exit() function.

IMPORTANT POINT:

- A complete set of instruction written using a programming language is termed as a **program/code,program code**
- Python is a powerful and flexible programming language.
- It is a platform independent programming language.
- Python provides two different ways with Interactive mode and script mode.
- Interactive mode doesnot save command in the form of a programme and the output is placed between command as it is displayed as soon as we press the enter key
- Interactive mode is suitable for testing code.
- Python's interactive interpreter is also called python shell.
- Script mode is useful for creating programs and then running them later and getting complete output
- All the programs in python are saved with the .py or .pyw extension

FILL IN THE BLANKS

1. program are instructions given to the computer.
2. Python was created by Guido van Rossum
3. Python is interpreted.
4. Python syntax is case sensitive.
5. In python a syntax error is detected by the interpreter at runtime.
6. Python is a platform independent language.

SHORT QUESTIONS

1. What is python?
2. Why is python interpreted?
3. Who developed python?
4. Why is python easy to learn?
5. Write any one features of python library?
6. Is python a compiler language or an interpreter language?
7. Python is a free and open source language? What do you understand by this features?
8. State some distinguish features of python?
9. Distinguish between java and python?
10. What is the difference between interactive mode and script mode in python?

PYTHON PROGRAMMING FUNDAMENTALS

- A python program sometimes called a script, is a sequence of definitions and commands. These definitions are evaluated and the commands are executed by the python interpreter, which is known as python shell.
- In python programming language data types are inbuilt and unlike in c++, declaration of variables is not required and memory management is automatically done by python
- Python supports dynamic typing.

VARIABLES AND TYPES:

- A variable is like a container that stores values that you can access or change.
- The value of a variable keeps changing during the programme execution.
- In python every element is termed as an object. Hence a variable is also an object in python
(I) e.g x=4 (it will automatically assign a value 4 to variable named x, which is an integer.
If we type x=20(>>>x=20) then write x(>>>x) and press enter key it display 20 as the output.

```
(II)>>>x=5
```

```
>>>y=6
```

```
>>>z=x+y
```

```
>>>z=z+1
```

```
>>>x=y
```

```
>>>y=7
```

After executing the above lines of the code x is 6 y is 7 and z is 12

Alternatively we can type this programme in script mode but for displaying the values of variables x, y and z we need to give print() statement.

Print() statement is used to display the value assigned to a variable