Python - Basic Syntax

Just like natural languages, a computer programming language comprises of a set of predefined words which are called keywords. A prescribed rule of usage for each keyword is called a syntax.

Python 3.x interpreter has 33 keywords defined in it. Since they have a predefined meaning attached, they cannot be used for any other purpose. The list of Python keywords can be obtained using the following help command in Python shell.

```
>>>help("keywords")
```

The following table list all the keywords in Python.

False	def	if	raise
None	del	import	return
True	elif	in	try
and	else	is	while
as	except	lambda	with
assert	finally	nonlocal	yield
break	for	not	
class	from	or	
continue	global	pass	

Except for the first three (False, None and True), the other keywords are entirely in lowercase.

Python Identifiers

Apart from keywords, a Python program can have variables, functions, classes, modules, packages etc. Identifier is the name given to these programming elements. An identifier should start with either an alphabet letter (lower or upper case) or an underscore (_). After that, more than one alphabet letters (a-z or A-Z), digits (0-9) or underscores may be used to form an identifier. No other characters are allowed.

- Conventionally, the name of the class begins with an uppercase

  alphabet letter. Others start with lowercase alphabet letters.
- Use of one or two underscore characters has a special significance

  when naming the instance attributes of a class. More about this will follow in the discussion about inheritance.
- Two leading and trailing underscores are used in the language itself > for a special purpose. For example (e.g. __add__, __init__)

Note:

identifiers are case sensitive which means variables named age and Age are different.

Python Statement

By default, the Python interpreter treats a piece of text terminated by hard carriage return (new line character) as one statement. It means each line in a Python script is a statement. (Just as in C/C++/C#, a semicolon ; denotes the end of a statement).

Example: Python Statements

```
msg="Hello World"

code=123

name="Steve"
```

However, you can show the text spread over more than one lines to be a single statement by using the backslash (\ as a continuation character. Look at the following examples:

Example: Continuation of Statement

msg="Hello Pythonista \

Welcome to Python Tutorial \

from TutorialsTeacher.com"

Similarly, use the semicolon ; to write multiple statements in a single line.

Example: Multiple Statements in Single Line

```
msg="Hello World";code=123;name="Steve"
```

Indents in Python

Many times it is required to construct a block of more than one statements. For example there are usually multiple statements that are part of the definition of a function. There can be one or more statements in a looping construct.

Different programming languages use different techniques to define the scope and extent of a block of statements in constructs like class, function, conditional and loop. In C, C++, C# or Java, statements inside curly brackets { and } are treated as a block.

Python uses uniform indentation to denote a block of statements. When a block is to be started, type the exclamation symbol (**:**) and press Enter. Any Python-aware editor (like IDLE) goes to the next line leaving an additional whitespace (called indent). Subsequent statements in the block follow the same level of indent. In order to signal the end of a block, the whitespace is de-dented by pressing the backspace key. If your editor is not configured for Python, you may have to ensure that the statements in a block have the same indentation level by pressing the **spacebar** or **Tab** key. The Python interpreter will throw an error if the indentation level in the block is not same.

To end the block, press Enter two times.

Comments in Python

In a Python script, the symbol # indicates the start of a comment line. It is effective till the end of the line in the editor. If # is the first character of the line, then the entire line is a comment. It can be used also in the middle of a line. The text before it is a valid Python expression, while the text following is treated as a comment.

Example: Comments

```
# this is a comment

print ("Hello World")

print ("Welcome to Python Tutorial") \#this is also a comment but after
a statement.
```

In Python, there is no provision to write multi-line comments, or a block comment. (As in C#/C/C++, where multiple lines inside /* .. */ are treated as a multi-line comment). Each line should have the # symbol at the start to be marked as a comment. Many Python IDEs have shortcuts to mark a block of statements as a comment. In IDLE, select the block and press Alt + 3.

A triple quoted multi-line string is also treated as a comment if it is not a docstring of a function or a class. (The use of docstring will be explained in subsequent tutorials on Python functions.)

Example: Multi-line Comments

```
'''

comment1

comment2

comment3

'''

print ("Hello World")
```

Getting the User's Input

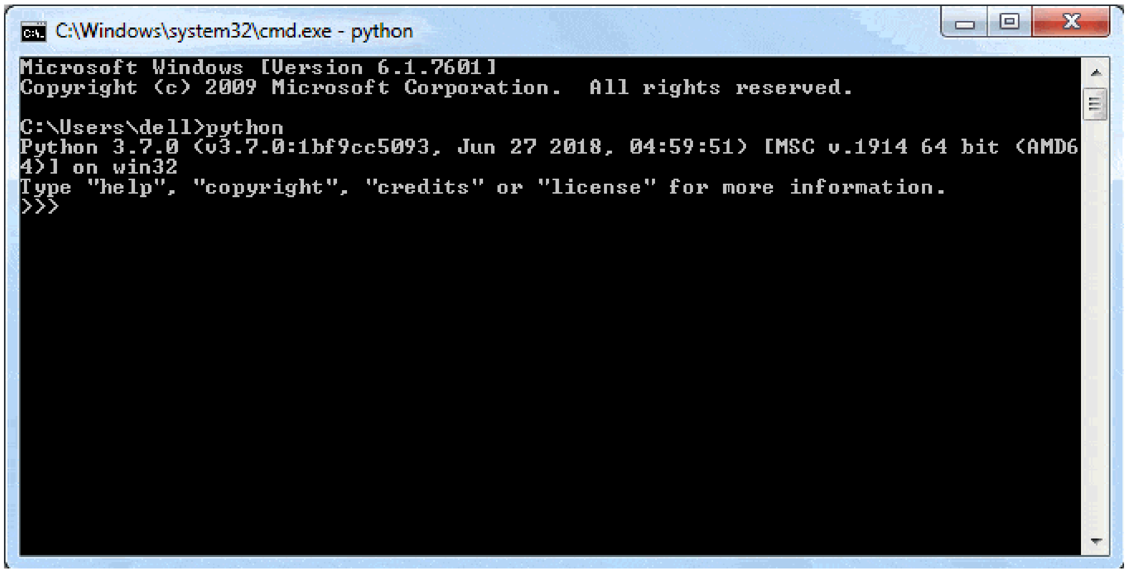
The input() function is a part of the core library of standard Python distribution. It reads the key strokes as a string object which can be referred to by a variable having a suitable name.

taking-users-input

Note that the blinking cursor waits for the user's input. The user enters his input and then hits Enter. This will be captured as a string.

In the above example, the input() function takes the user's input from the next line, e.g. 'Steve' in this case. input() will capture it and assign it to a name variable. The name variable will display whatever the user has provided as the input.

The input() function has an optional string parameter that acts as a prompt for the user.



```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation.  All rights reserved.

C:\Users\dell>python
Python 3.7.0 (v3.7.0:1bf9cc5093, Jun 27 2018, 04:59:51) [MSC v.1914 64 bit (AMD6
4)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>>
```

taking Users Inputs

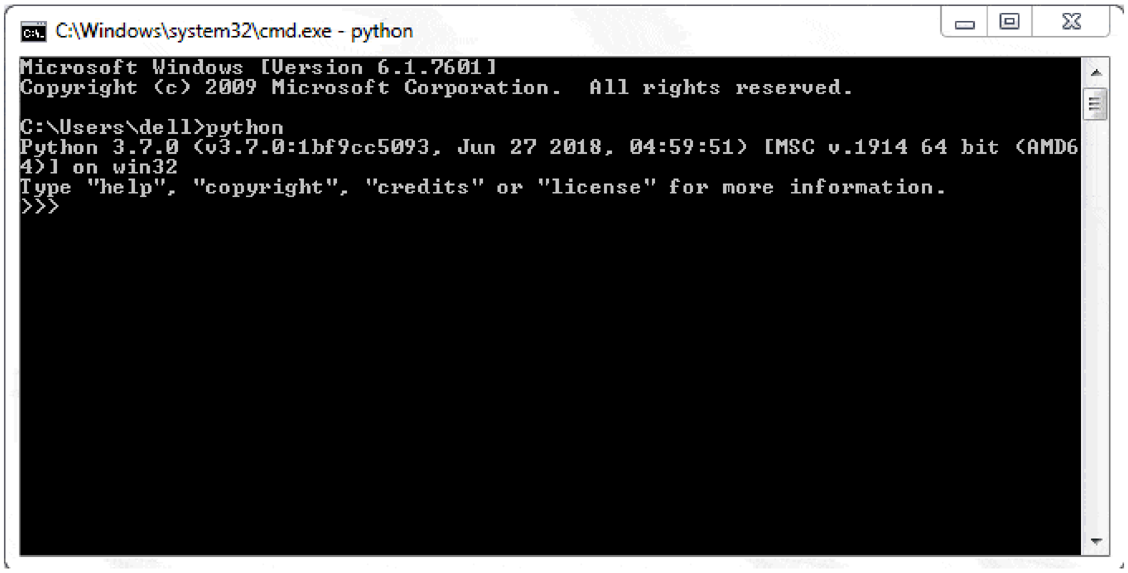
The input() function always reads the input as a string, even if comprises of digits. The type() function used earlier confirms this behaviour.

```
>>> name=input("Enter your name: ")
Enter your name: Steve
>>> type(name)
<class 'str'\>
>>> age=input("Enter your age: ")
Enter your age: 21
>>> type(age)
<class 'str'\>
```

How do we read numeric data from the keyboard? We have to use other built-in functions to convert the string to integer/float values. These functions will be introduced in the number (Links to an external site.) chapter.

Display the Output

Another built-in function print() serves as an output statement in Python. It echoes the value of any Python expression on the Python shell.



```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation.  All rights reserved.

C:\Users\dell>python
Python 3.7.0 (v3.7.0:1bf9cc5093, Jun 27 2018, 04:59:51) [MSC v.1914 64 bit (AMD6
4)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>>
```

Display the Output

Multiple values can be displayed by the single print() function separated by comma. The following example displays values of name and age variables using the single print() function.

```
>>> name="Ram"
>>> age=21
>>> print("Name:", name, "Age:",age)
Name: Ram Age: 21
```

By default, a single space (' ') acts as a separator between values. However, any other character can be used by providing a **sep** parameter. In the following example, "=" is used as a separator character.

```
>>> name="Ram"
>>> age=21
>>> print(name,age)
Ram 21
>>> print(name,age,sep=",")
Ram,21
```

The output of the print() function always ends by a newline character. The print() function has another optional parameter **end**, whose default value is "". This value can be substituted by any other character such as a single space (' ') to display the output of the subsequent print() statement in the same line. This is especially useful in a Python script like the one shown below:

Example: display.py

```
name="Amar"

age=21
```

```python
print("Name:", name, end=" ")

print("Age:", age)
```

Save the above script as display.py and open the command prompt in Windows or the terminal in another platform, and run the above script as below.

```
>>>python display.py Name: Amar Age: 21
```

Note that the output is displayed in a single line even if there are two print() statements.