Python Basics

Content

- Comments in Python
- Variable Declaration in Python
- Data Types in Python
- Type Conversion in Python
- Operators in Python

Comments in Python

- In general, Comments are used in a programming language to describe the program or to hide the some part of code from the interpreter.

- Comments in Python can be used to explain any program code. It can also be used to hide the code as well.

- Comment is not a part of the program, but it enhances the interactivity of the program and makes the program readable.

Python supports two types of comments:

- Single Line Comment
- Multi Line Comment

Comments in Python

Cont..

Single Line Comment:

In case user wants to specify a single line comment, then comment must start with **'#'**

Example:

```
# This is single line comment
print "Hello Python"
```

Output:

Hello Python

Multi Line Comment:

Multi lined comment can be given inside triple quotes.

Example:

```
'''This is
   Multiline
   Comment'''
print "Hello Python"
```

Output:

Hello Python

Variable Declaration in Python

- A variable is a named memory location in which we can store values for the particular program.

- In other words, Variable is a name which is used to refer memory location. Variable also known as identifier and used to hold value.

- In Python, We don't need to declare explicitly variable in Python. When we assign any value to the variable that variable is declared automatically.

- In Python, We don't need to specify the type of variable because Python is a loosely typed language.

Variable Declaration in Python

Cont..

- In loosely typed language no need to specify the type of variable because the variable automatically changes it's data type based on assigned value.

Rules for naming variable:

- Variable names can be a group of both letters and digits, but they have to begin with a letter or an underscore.
- It is recommended to use lowercase letters for variable name. ‘SUM’ and ‘sum’ both are two different variables.

Example: Vardemo.py

```
a=10 #integer
b="StudyGlance" #string
c=12.5 #float
print(a)
print(b)
print(c)
```

output:

$python3 Vardemo.py

```
10
StudyGlance
12.5
```

Variable Declaration in Python

Cont..

- Python allows us to assign a value to multiple variables and multiple values to multiple variables in a single statement which is also known as multiple assignment.
- **Assign single value to multiple variables :**

Example: Vardemo1.py

```
x=y=z=50
print x
print y
print z
```

output:

```
$python3 Vardemo1.py
50
50
50
```

- **Assign multiple values to multiple variables :**

Example: Vardemo2.py

```
a,b,c=5,10,15
print a
print b
print c
```

output:

```
$python3 Vardemo2.py
5
10
15
```

Data Types in Python

- In general, Data Types specifies what type of data will be stored in variables. Variables can hold values of different data types.

- Python is a dynamically typed or loosely typed language, hence we need not define the type of the variable while declaring it.

- The interpreter implicitly binds the value with its type.

- Python provides us the **type ()** function which enables us to check the type of the variable.

Data Types in Python

Cont..

- Python provides following **standard data types**, those are
  - ✓ **Numbers**
  - ✓ **String**

Numbers:

- Number stores numeric values. Python creates Number type variable when a number is assigned to a variable.

There are three numeric types in Python:

1. int
2. float
3. Complex

Data Types in Python

Cont..

1. int:

Int, or integer, is a whole number, positive or negative, without decimals, of unlimited length.

Example:

a=10
b=-12
c=123456789

2. float:

Float or "floating point number" is a number, positive or negative, containing one or more decimals.

Example:

X=1.0
Y=12.3
Z=-13.4

3. complex:

Complex numbers are written with a "j" as the imaginary part.

Example:

A=2+5j
B=-3+4j
C=-6j

Data Types in Python

Cont..

String:

- The string can be defined as the sequence of characters represented in the quotation marks. In python, we can use single, double, or triple quotes to define a string.

- In the case of string handling, the operator + is used to concatenate two strings as the operation *"hello"+" python"* returns *"hello python"*.

Example:

```
S1='Welcome'  #using single quotes
S2="To"       #using double quotes
S3='''Python''' #using triple quotes
```

Data Types in Python

Cont..

Example: "datatypesdemo.py"

```
a=10
b="Python"
c = 10.5
d=2.14j
print("Data type of Variable a :",type(a))
print("Data type of Variable b :",type(b))
print("Data type of Variable c :",type(c))
print("Data type of Variable d :",type(d))
```

Output:

python3 datatypesdemo.py

Datatype of Variable a : <class 'int'>

Datatype of Variable b : <class 'str'>

Datatype of Variable c : <class 'float'>

Datatype of Variable d : <class 'complex'>

Type Conversion in Python

- Python provides Explicit type conversion functions to directly convert one data type to another. It is also called as **Type Casting** in Python
- Python supports following functions
  1. **int ()** : This function converts **any data type to integer.**
  2. **float()** : This function is used to convert **any data type to a floating point number.**
  3. **str()** : This function is used to convert **any data type to a string.**

Example:"Typeconversiondemo.py"

```
x = int(2.8)
y = int("3")
z = float(2)
s = str(10)
print(type(x));print(type(y))
print(type(z)); print(type(s))
```

Output:

python3 typeconversiondemo.py

<class 'int'>
<class 'str'>
<class 'float'>
<class 'str'>

Operators in Python

- The operator can be defined as a symbol which is responsible for a particular operation between two operands.
- Python provides a variety of operators described as follows.

Arithmetic operators :

+ (addition)	**eg:** a=20; b=10 then a **+** b=30
- (subtraction)	**eg:** a=20; b=10 then a **-** b=10
***(multiplication)	**eg:** a=20; b=10 then a * b=200
/ (divide)	**eg:** a=20; b=10 then a **/** b=2
%(reminder)	**eg:** a=20; b=10 then a **%** b=0
// (floor division)	**eg:** a=24; b=7 then a **//** b=3
** (exponent)	**eg:** a=2; b=3 then a ** b=8

Membership operators :

in (True, If the value is present in the data structure)

not in (True, If the value is not present in the data structure)

print() and input()

Cont…

1.print()

Used to display output on the screen.

Example:

Example:"printdemo.py"

```
a=10
Print("Hello")
print("Value of a is",a)
```

Output: "printdemo.py"

```
a=10
Print("Hello")
print("Value of a is",a)
```

print() and input()

2. input() :

Python's input() function is used to take user input. By default, it returns the user input in form of a string.

Example:

Example:"printdemo.py"

```
a=int(input("Enter No"))
print("Hello")
print("Value of a is ",a)
```

Output: "printdemo.py"

```
10
Hello
Value of a is 10
```