

20/06/20

ASSIGNMENT - 2

MODULE - 1

PYTHON

1) What are the data types in python? Explain

- Ans 1) **Numbers:** Number data types store numeric values. Number objects are created when you assign a value to them.
- 2) **Strings:** Strings in python are identified as a contiguous set of characters represented in the quotation marks. Python allows either pair of single or double quotation
- 3) **Lists:** Lists are the most versatile of python's compound data types. A list contains items separated by commas and enclosed within square brackets ([]).
- 4) **Tuples:** A tuple is another sequence data type that is similar to the list. A tuple consists of a number of values separated by commas and tuples enclosed within parenthesis.
- 5) **Dictionary:** Python's dictionaries are kind of hash-table type. They work like associative arrays or hashes found in perl and consist of key values pair. A dictionary key can be almost any python type, but are usually numbers or strings. Values, on the other hand, can be any arbitrary python object. Dictionaries are enclosed within curly braces.

2) Briefly explain history of python

Python has become one of the most interesting programming languages of our time. It was conceived by Guido van Rossum at CWI in the Netherlands during the late 1980's. What's peculiar about its creation is that this revolutionary program came to life out of a

simple "hobby"; quoting Van Rossum. In fact, the latter intended to start this programming project with the sole purpose of entertainment and killing some time during the Christmas week of December 1989.

What is mostly amazing about this story is that he created it using solely his computer. His office was closed and all he had was this simple machine and his brilliant mind, thus, the first version of this program first appeared in 1991, that is 25 years ago. Python was ironically named after the famous British sketch comedy series "Monty Python's Flying Circus" as the founding father was a big fan. During the following year, the language got adopted by the language got adopted by the team of the Amoeba project, while Guido pursued its mainly development in his spare time.

In February 1991, the first public version of python, numbered 0.9.07, was posted on the Usenet alt.sources forum. In 1995, Van Rossum continued his work on python at CNRG in Reston, United States, whereas Python 0.6 would be the last version on Grail (an extensible Internet browser written in Python).

Nevertheless, it does not stop here. As a matter of fact, Python continues to impress with its continuous development and progress. The development team moved to PythonBeOpen.com in 2000. And that is where Python 2.0 was released.

However, it did not stop there. Python

succeeded in releasing the new major version, Python 3.0, which was out in December 2008. Soon enough, this version was rapidly followed by a 3.1 version fixing the mistakes of the previous.

3) Explain all the operators in python

Ans Python language supports the following types of operators

Arithmetic Operators

Relational Operators

Assignment Operators

Logical Operators

Bitwise Operators

Comparison Operators

Identity Operators

Membership Operators

Arithmetic Operator : It is used to perform mathematical operations like addition, subtraction, multiplication operator

Meaning

Example

+

Add two operands
or unary plus

$x+y+2$

-

Subtract right operand
from the left or unary
minus

$x-y-2$

*

Multiply two operands

$x*y$

/

Divide left operand
by the right one
Always results in float)

x/y

%

Modulus - remainder
of the division of
left operand by the
right

$x \% y$ (remainder
of x / y)

//

Floor division -
division that results
in a whole number $x // y$
adjusted to the
left in the number
line

Exponent - left $x^{**} y$ (x to the
operand raised to power y
the power of
right)

Comparison operator It is used to compare
values. It returns either true or false according
to the condition

Operator

Meaning

Example

>

Greater than - True if
left operand is $x > y$
greater than the
right

<

Less than - True if
left operand is $x < y$
less than the
right

$= =$ Equal to - True if both operands are equal $x = y$

$!=$ Not equal to - True if operands are not equal $x \neq y$

\geq Greater than or equal to - True if left operand is greater than or equal to the right $x \geq y$

\leq Less than or equal to - True if left operand is less than or equal to right $x \leq y$

Logical Operators: Logical operators are the and, or, not operators.

Operator	Meaning	Example
and	True if both the operands are true	$x \text{ and } y$
or	True if either of the operands is true	$x \text{ or } y$
not	True if operand is false (complements the operand)	$\text{not } x$

Bitwise Operators: Bitwise operators act as on operands as if they were strings of binary digits. They operate bit by bit, hence the name.

operator	meaning	example
&	Bitwise AND	$x \& y = 010000\ 0000$
	Bitwise OR	$x y = 110000\ 1110$
~	Bitwise NOT	$\sim x = 1111\ 0011$
^	Bitwise XOR	$x ^ y = 110000\ 1110$
>>	Bitwise right shift	$x >> 2 = 20000\ 0010$
<<	Bitwise left shift	$x << 2 = 400010\ 1000$

ASSIGNMENT OPERATOR: Assignment operators are used in python to assign values to variables.

operators : $=$, $+=$, $-=$, $*=$, $/=$, $\cdot*=$, $//=$, $\ast\ast=$, $\&=$, $\mid=$, $\wedge=$, $\gg=$, $\ll=$

Identity Operators:

operator	meaning	example
is	True if the operands are identical (refer to the same object)	$x \text{ is } True$

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True if the
operands are not
identical (do not
refer to the same
object).
 $x \neq y$
 $x \neq 5$

Membership Operators

Operator	Meaning	Example
in	True if value / variable is found in the sequence	5 in x
not in	True if value / variable is not found in the sequence	5 not in x

Q) Explain the features of Python

Ans. Easy to learn and use: Python is easy to learn and use. It is developer-friendly and high level programming language.

Expressive language: Python language is more expressive means that it is more understandable and readable.

Interpreted Language: Python is an interpreted language i.e. interpreter executes the code line by line at a time. This makes debugging easy and thus

suitable for beginners.

Cross-platform language: Python can run easily equally on different platforms such as Windows, Linux, Unix and Macintosh etc. so we can say that python is a portable language

Object-Oriented Language: Python supports object oriented language and concepts of classes and objects come into existence

5) Justify why python is interactive interpreted language

Python is an interpreter and when we are running python interactively, we can type a line of python (a sentence) and python processes it immediately and is ready for us to type another line of python.