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Briefly explanation of history of python

### History of python

- python laid its foundation in the late 1980s
- The implementation of python was started in the December 1989 by Guido van Rossum at CWI in Netherland
- In February 1991, Van Rossum published the code (labeled version 0.9.0) to alt. sources
- In 1994, python 1.0 was released with new features like:  
: lambda, map, filter, reduce
- python 2.0 added new features like: list comprehensions, garbage collection system
- On December 2, 2008, python 3.0 (Py3k) was released
- ABC programming language is said to be the predecessor of python language which was capable of exception handling and interfacing with Amos operating system
- Python is influenced by following programming languages
  - ABC language
  - Modula-3

we list of version of python and their date of release

Python 3.6

December 23, 2016

Python 3.7

June 27, 2018

Python 3.8

14 Oct 2019

Python 3.9.2

24 Feb 2020

Explain the feature of python ?

Python provides lots of features that are listed below

- 1) Easy to learn and simple
- 2) Free & open source
- 3) High-level language
- 4) portable language
- 5) Interactive
- 6) Interpreted language (i.e. executes the code line by line)
- 7) cross-platform language (we can run equally on different platform such as windows linux unix)
- 8) Object-oriented language  
(python supports object oriented language and concepts of class & objects come into existence)
- 9) Extensible
- 10) Large standard library
- 11) GUI programming supports  
(Graphical user Interface) can be developed using python
- 12) scalable
- 13) Data bases



what are the data types present in Python? Explain?

Data Types :- a=10, b="Sai"  
Print(type(a))  
%> <type 'int'>

Standard data types

A variable that can hold different data type

Python provided various standard data type that defined the storage method on each of them

The data types defined in python are

- 1) Numbers
- 2) String
- 3) List
- 4) Tuple
- 5) Dictionary

i) Number:-

They are 4 types: i) int ii) long iii) float iv) complex Number  
(7+5j)

ii) Strings:- In python the b/w quote marks are strings  
( ' ' ) ( " " ) ( " " )

iii) List:- it is similar to array in C, It can contain diff type of data. In the list the items separated with ( , ) and enclosed with square brackets  
( [ ] )

Ex: l = [1, "hi", "Sai"]      print(l[2])  
Sai

## 9.5) Tuple:-

It is simpler to the list in many ways like list, tuple can contain different data types. The items in tuple are separated by comma (,) and enclosed with parentheses ( )

Note:- It can read-only data structure as we can't modify the size and value of items of a tuple

## Dictionary:-

It is an ordered set of key-value pair of items, it is like an associative array or a hash table where each key stores a special value. Key can hold any primitive data types whereas value is an arbitrary python object.

The items in dictionary are separated with comma & { }

Keywords



# Python Operators

It is defined as a symbol that can perform an operation between two operands. we have discussed already in class & java (oops)

\* Arithmetic operator

\* Comparison

\* Assignment

\* Logical

\* Bitwise operator

\* Membership

\* Identity

## Arithmetic operator:-

It is used to perform arithmetic operation between two operands

'+', '-', '\*', '/', '%', '//' Floor division, exponent (\*\*),

(\*\*) :- It is an exponent operator represented as it calculates the 1st operand power to second operand

(//) :- It gives the floor value of the quotient produced by dividing the two operands

## Comparison operation

It is used to compare between two operands and returns in boolean true & false

'==', '!=', '<=', '>=', '>', '<'

## Assignment operator

It is used to assign the operands to right expression to left expression.

## Example of assignment operator

= It assigns the value of the right expression to the left operand

$+=$  : It increases the value of the left operand by the value of the right operand and assign the modified value back to left operand

$-=$  : It is same as  $+=$  but in this decreases

$*$  : It is same but in this case multiply

$\% =$

$**=$ ,  $// =$

### Bitwise operator:-

The Bitwise operators perform bit by bit operation the value of the operands.

The Bitwise operators are:-

Bitwise (And) :  $\&$       Bitwise left side  $<<$

Bitwise (Or) :  $|$       Bitwise Right shift  $>>$

Bitwise xor ( $\wedge$ ) :  $\wedge$

Bitwise negation :  $\sim$

### Logical operator:-

The logical operator is used to check the multiple condition at a time, The python supports the following operator

1) and : If both expression is true then the condition will be true

2) OR : If one of expression is true then the condition will be true

3) not : If an expression  $a$  is true then  $\text{not}(a)$  will be False and vice versa



## Membership Operator :-

Python membership operators are used to check the membership of value inside a python data structure.

If the value is present in the data structure, then the resulting value is true otherwise it returns false

in :- It is evaluated to be true if the first operand is found in the second operand (list, tuple or dictionary)

not in :- It is evaluated to be true if the first operand is not found in the second operand (list, tuple or dictionary)

## Declaring Variable & Assigning values :-

while Declaring values of variables we don't need to declare explicitly in python. we assign the values to the variables with the help of equal (=) operator

Ex:  $a = 10$

Variable      value      name = Sai      variable      value

↓                      ↓                      ↓

→ Multiple assignments :-

we can assign the Multiple values to variable into two ways :

1) Assigning single value to multiple variable Ex:  $x = y = z = 1$

2) " Multiple to multiple variable Ex:  $a, b, c = 1, 2, 3$



5) Justify why python is interactive interpreted language

A) python is an interpreted language, because python code is executed line by line at a time like any other language c, c++, Java, etc there is no need to compiler python code this makes it easier to debug our code. The source code of python is converted into an intermediate form called byte code