Assignment-1

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① what are the data types in python? Explain the data types defined in the python also?

① Numbers
② String
③ List
④ Tuple
⑤ Dictionary.

① **Numbers:** Number store numeric value. python supports 4 type of numeric data

① int (signed integers like 10,2,29 etc)
② Long (long integers used for a higher range of values like 908090800L etc)
③ Float (It is used to store floating point numbers like 1.9, 9.9002 etc)
④ complex (complex numbers like 2+14j);

② **String:** The string can be defined as the sequence of characters represented in the quotation marks. In python we use single, double or triple quotes to define a string.

Eg: "hello world"

③ **List:** List are similar to arrays in C. However, the list contain data of different types. the items stored in the list are separated with a comma and enclosed with in the square brackets [ ].
we can use slice [:] operators to access the data of the list.

Eg: l = [1, "hi", "python", 2]
print(l[3:]);
o/p [2]

④ TUPLE: A TUPLE is similar to the list in many ways. Like lists, TUPLE also contain the collection of the items of different data types. the items of tuple are separated with a comma(,) and enclosed in the parentheses()

Eg: t = ("hi", "python", 2)
print(t[1:]);
o/p: ('python', 2)

⑤ Directory: Directory is an ordered set of a key-value pair of items. It is like an associative array. key can hold any primitive data type whereas value is an arbitary python object.

Eg: d = {1: 'jimmy', 2: 'alex', 3: 'john'};
print("1st name is" + d[1]);

o/p: 1st name is jimmy.

② Briefly explain history of python?

python is a widely used, general-purpose, high-level programming language. It was initially designed by Guido van Rossum in 1991 and developed by python software foundation. It was mainly its syntax allows programmers to express concepts in fewer lines of code.

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In the late 1980's history was about to written. It was that time when working on python started. soon after that, Guido van Rossum began doing its application based work in december of 1989 by at centrumwiskunde and informatica (CWI) which is situated in netherland. It was started first as a history hobby project because he was looking for an interesting project to keep him occupied during christmas. python is said The programming language which python language to have succeeded is ABC programming language, which had the interfacing with the Amoeba operating system and had the feature of exception handling. He had already helped to create ABC earlier in his career and he had seen some issues with ABC but liked most of the features. After that what he did as really very clever. He had taken the syntax of ABC, and some of its good features. It came with a lot of complaints too, so he fixed those issues completely and had created a good scripting language which had removed all the flaws. the inspiration for the name came from BBC's TV show - 'Monty python's flying circus', as he was a big fan of the TV show and also he wanted a short, unique and slightly mysterious name for his invention and hence he name it python! he was the (Benevolent dictator for life (BDFL) until he stepped down from the position as the leader on 12th July 2018. for quite some time he used to work for google, but currently, he working at dropbox.

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The language was finally released in 1991. when it was released, it used a lot fewer codes to express the concepts when we compare it with java, c and c++. Its design philosophy was quite good too. Its main objective is to provide code readability and advanced developer productivity when it was released it had more than enough capability to provide classes with inheritance, several core data types exception handling and functions.

(3) Explain the operators in python?

(i) Arithmetic operators:
These are used to perform arithmetic operations between two operands. It includes addition (+), subtraction (-), multiplication (*), divide (/), remainder (%), floor division (//) and exponent (**).

(ii) Comparison operators:
These are used to compare the value of the two operands and returns boolean true or false accordingly.
The comparsion operators are:
==, !=, <=, >=, >, <

(iii) Assignment operators
These are used to assign the value of the right expression to the left operand.
eg: of Assignment operators
=, +=, -=, *=, %=, **=, //=

(iv) Bitwise operators:
The bitwise operators perform bit by bit operation on the values of two operands
Binary and (&) Binary (xor) (^) Lefshift (<<)
Binary or (|) Negation (~). Rightshift (>>).

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(v) Logical operators:
These are used primarily in the expression evaluation to make a decision python supports and, or, not logical operators.

(vi) Membership operators:
These are used to check the membership of value inside a python. If the value is present in data structure, then the resulting value is true otherwise it returns false.
x in and not in are membership operators.

(vii) identity operators:
is - It is evaluated to be true if the references present at both side point to the same object.
is not - It is evaluated to be true if the references present at both side do not point to the same object.

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(4) Explain the features of python?

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

(2) expressive language:
It means that is more understandable and readable.

(3) Interpreted language:
Interpreter executes the code line by line at a time. this makes debugging easy and thus suitable for beginners.

(4) cross-platform language:
It can run equally on different platforms such as windows, linux, unix etc. so we can say python is a portable language.

(5) Free and open source:
It is freely available at official web address. Source-code is also available. it is open source.

(6) object-oriented language:
It supports object oriented language and concepts of classes and objects come into existence.

(7) extensible:
It implies that other languages such as c/c++ can be used to compile the code and thus it can be used further in our python code.

(8) Large standard Library
python has large and broad library and provides rich set of module and functions for rapid application development.

(9) GUI programming support
Graphical user interfaces can be developed using python.

(10) Integrated:
It can be easily integrated with languages like c, c++, java etc...

(5) Justify why python is interactive interpreted language?

A python is an interacted interpreted language because → unlike c/c++ etc, python is an interpreted object oriented programming language. By interpreted it is meant that each time a program is run the interpreter checks through code for errors and then interprets the instructions into machine readable bytecode.

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we can easily integrated python with other languages like c, c++, etc. there is no need to compile python code this makes it easier to debug our code. the source code of python is converted into an immediate from called bytecode.