Assignment 2.

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① What are the data types in Python ? Explain the data types.

Ans. The data types defined in python are :-

1. Numbers
2. string
3. List
4. Tuple
5. Dictionary.

Numbers: Numbers store numeric value
→ supports 4 types of numeric data.

a. int : signed integers
b. long: long integers used for a higher range of values
c. float : floating point numbers.
d. complex : complex numbers in the form of $a+ib$

String: The string can be defined as sequence of characters defined / represented in quotation marks,

eg: "Hello World"

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List: Lists are similar to arrays in C. However list contains data of different types. The items stored in list are separated with comma & enclosed within square bracket [ ]
We can use slice [:] operators to access the data of the list.

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eg: k = [1, "hi", 2, 3]
    print (k[3:]);
```

o/p: [3]

Tuple: A tuple is similar to list in many ways. Like lists, Tuple also contains the collection of items of different data types. The items of tuple are separated with comma & enclosed with parenthesis ( )

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eg: b = ("Java", "Python", 100)
    print (b[1:]);
```

o/p: ("Python", 100)

Dictionary: Dictionary 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 arbitrary python object

```
eg: d = {1: 'Peter', 2: 'Harvey', 3: 'John'};
    print ("1st name is" + d[1]);
```

o/p: 1st name is Peter

(2) Briefly explain history of python

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Ans. Python is a widely used, general purpose high-level language. It was initially designed by Guidovan Rossum in 1991 and was developed by python software foundation.

In the late 1980's, work on python started, soon after that Guidovan Rossum began doing its application work in Dec 1989 at CWI (Centrum wiskunde and Informatica) in Netherland.

Python was a successor of ABC programming. which had the interfacing with Amoeba OS and the feature of exception handling.

When the language was first realeased in 1991 it used lot fewer codes to express the concepts when compared to others. The main objective was to provide code readability and advanced developer productivity. when it was realeased it had enough capability to provide classes with inheritance several core datatypes exception handling and functions.

(3) Explain the operators in Python.

Ans Arithmetic operators: To perform arithmetic operations like addition, subtraction, multiplication division, rimainder ; floor division and exponents between two operators (+, -, /, %, //, **, *)

Comparision operators: To compare the value of two operands & returns true or false

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

Assignment operators: To assign value of the right expression to left operand

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=, +=, -=, *=, %=, **=, //=

Bitwise operators: To perform bit by bit operation on values of two operands.

Binary AND (&), Binary XOR (^), leftshift (<<)
Binary OR (|), Negation (~), Rightshift (>>)

Logical operators: Used for expression evaluation to make a decision. Python supports and, or, not logical operators.

Membership operators: Used to check membership of value inside a python. If value is present in datastructure, the resulting value is true or false.

Identity operators:

is - It is evaluated to be true if the reference present at both side point to the same object

is not - It is evaluated to be true if the reference present at both side donot point to the same object.

(4) Explain the features of Python.

Ans. * Easy to learn and use : Python is a easy language to use and is a user-friendly high level programming language.

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* Expressive language - more understandable and readable.
* Interpreted language - Interpreter executes the code line by line at a time. This makes debugging easy and thus suitable for beginners
* Cross platform language - It can run equally on different platforms such as windows, linux, unix, etc, hence also portable.
* Free and open source - It is freely available at official web address.
* Object-oriented language - It supports object-Oriented language and concepts of classes and objects come into existence.
* Extensible - It implies that other languages such as c/c++ can be used to compile the code and thus it can be further used in our python code.
* Large standard library - Python has large and broad library that provides rich set of module and functions for rapid application development

* GUI programming support :- Graphical user interfaces can be developed using Python

* Integrated - It can be easily integrated with languages like C, C++, java, etc.

(5) Justify why Python is interactive interpreted language.

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Ans. Python is an interacted interpreted language because, unlike C/C++ python is an interpreted object oriented programming language. By interpreted it is meant that each time a program is made to run the interpreter checks through the code for errors and then interprets instructions into machine readable byte code.

We can easily integrate python with other languages like C, C++, etc. There is no need compile python code this makes it easier to debug our code. The source code of Python is converted into an immediate form called byte code.