

## Assignment 2

① What are the datatypes in Python? Explain.

Datatypes are the classification of data types. These represent a kind of value which determines what operations can be performed on that data.

Python has the following standard or built-in data types:

## ② Numeric:

↳ A numeric value is any representation of data which has a numeric value.

i) Integer - Positive or negative whole numbers

ii) float - any real number with a floating point

iii) complex - a number with real & imaginary part represented as  $x+yi$ .

## ③ Boolean:

↳ Data with one of two built-in values "True" or "False".

## ④ Sequence type:

↳ A sequence is an ordered collection of similar or different data types.

i) String - Collection of one or more characters

ii) List - Ordered collection of one or more data items, put in square brackets.

iii) Tuple - Ordered collection of one or more data items, put in parenthesis.

### ① Dictionary :

↳ It is an unordered collection of data in a key : value pair form. A collection of such pairs is enclosed in curly brackets.

### ② Briefly explain history of python.

Python is an interpreted, high-level, general-purpose programming language. Created by "Guido Van Rossum" and first released in 1991. Python's design philosophy emphasizes code readability with its notable use of significant whitespace. Its language constructs and object-oriented approach aim to help programmers write clear, logical code for small and large scale projects.

### ③ Explain all the Operators in python.

↳ Operators are used to perform operations on variables and values.

#### ⓐ Python Arithmetic Operators -

+	-	Adds numbers
-	-	Subtracts numbers
*	-	Multiply's numbers
/	-	gives <del>answre</del> extra dividing result
%	-	gives remainder
**	-	Exponentiation
//	-	Rounds to nearest whole number (quotient)

## ⑥ Python Assignment Operators -

- = - assigns variable a value
- + = - adds and stores it in same variable
- = - subtracts & stores in same variable
- \* = - multiply's & stores in same variable
- / = - divides and stores in same variable
- % = - modulus & stores in same variable

Similarly, //, \*\*, !=, !=, |=, ^=, >>=,  
 <<= are few more assignment operators

## ⑦ Python Comparison Operators -

- == - Equal
- != - not equal
- > - greater than
- < - less than
- >= - Greater than or equal to
- <= - less than or equal to

## ⑧ Python logical Operators -

- and - Returns true if both statements are true.
- or - Returns true if one of the statements is true.
- not - Reverse the result.

## ⑧ Python Identity Operators -

- `is` - Returns 'true' if both variables are the same object.
- `is not` - Returns 'true' if both variables are not the same object.

## ⑨ Python Membership Operators -

- `in` - Returns true if a sequence with the specified value is present in the object.
- `not in` - Returns true if a sequence with the specified value is not present in the object.

## ⑩ Python Bitwise Operators -

- `& (AND)` - Sets each bit to 1 if both bits are 1.
- `| (OR)` - Sets each bit to 1 if one of two bits is 1.
- `^ (XOR)` - Sets each bit to 1 if only one of two bits is 1.
- `~ (NOT)` - Inverts all the bits.
- `<< (left shift)` - Shift left by pushing zeros in from the right & let the leftmost bits fall off.
- `>> (right shift)` - Shift right by pushing copies of the leftmost bit in from the left.

## Q) Explain the features of python.

### ① Easy to code:

Python is high level programming language.  
It is very easy to code in python language &  
anybody can learn python basic in few days.  
It is also developer friendly language.

### ② Free & Open Source:

Python language is freely available at official  
website. Since, it is open-source, this means  
that source code is also available to the  
public.

### ③ Object Oriented language:

Python supports object oriented language and  
concepts of classes, objects, encapsulation etc.

### ④ High - level language:

When we write programs in python, we do not  
need to remember the system architecture,  
nor do we need to manage the memory.

### ⑤ Extensible feature:

We can write our python code into C/C++  
language and also we can compile that code  
in C/C++ language.

### ⑥ Python is Portable:

We can run this code on any platform.

④ Python is integrated language:  
It can be easily integrated with other  
language like C, C++ etc.

⑤ Interpreted language:

Python code is executed line by line at a time.  
The source code of python is converted into  
an immediate form called byte code.

⑥ Dynamically typed language:

Datatype for a variable is decided at run  
time not in advance. because of this feature  
we don't need to specify the type of variable.

⑤ Justify why python is interactive interpreted  
language.

By interpreted it is meant that each time a  
program is run the interpreter checks through  
the code for errors & then interprets the  
instructions into machine readable byte code.

An interpreter is a translator in Computer  
language which translates the given code  
line-by-line in machine readable byte codes.

When python stmt is entered and is followed  
by the return key, if appropriate. The  
result will be printed on screen imm-  
ediately in the next line. This is particularly  
advantageous in the debugging process. In  
interactive mode of operation.