Assignment - 2
Module - 1

1) What the data types in python? Explain

Python has the following data types built-in by default, in these categories:

Text type : str

Numeric type : int, float, complex

Sequence type : list, range, tuple

Mapping type : dict

Set type : set, frozenset

Boolean type : bool

Binary types : bytes, byte array, memory view

*) Standard data types : A variable can hold diff. types of values. Python provides various standard data types that define the storage method on each of them. The data types defined in python are given below.

① Number ② String ③ List ④ Tuple ⑤ Dictionary

*) Numbers :- Number stores numeric values. Python creates number objects when a number is assigned to a variable.

For example; a = 3 ; b = 5 # a and b are number objects.

Python supports 4 types of numeric data

1. int (signed integer like 10, 2, 29 etc)
2. long (long integers used for higher range of values like 90809080OL, -0x19292L, etc)

3) float (float is used to store floating point numbers like 1.9, 9.902, 15.2 etc.)

4) Complex (Complex numbers like $2.14j$, $2.0 + 2.3j$, etc)

* String :- String can be defined as the sequence of characters represented in the quotation marks.

ii) In python, we can use single, double or triple quotes to define a string.

iii) String handling in python is a straight forward task since there are various inbuilt functions and operators provided.

iv) In case of string handling, the operator '+' is used to concatenate two strings as the operation "hello" + "python" return "hellopython".

v) The operator '*' is known as repetition operator as the operation "python" * 2 returns "python python".

→ List :

i) List are similar to array in C. However, the list can contain data of different types. The items stored in the list are seperated with a comma (,) and enclosed within square brackets [].

ii) We can use slice [:] operators to access the data of the list. The concatenation operator (+) and repetition operator (*).
Works with the list in the same way as they were working with the strings.

→ Tuple :

3) Explain all the operators in python.

A: ① Arithmetic Operators: Used to perform mathematical operations like addition, subtraction, multiplication and division.

Operator	Description	Syntax
+	adds two operands	x + y
-	subtracts 2 operands	x - y
*	multiplies two operands	x * y
/	divides 1st operand by the second [float]	x/y
//	divides 1st operand by the second [floor]	x//y
%	Modulus: returns the remainder when 1st operand is divided by the second.	x % y
**	Power: Returns first raised to power second	x ** y

② Relational Operators: It compares the values. It either returns True or False according to the condition.

Operator	Description	Syntax
>	Greater than	x > y
==	Equals to	x == y
!=	Not equal	x != y
>=	Greater than or equals to	x >= y

③ logical operators : It performs logical AND logical OR and logical NOT operations

Operator	Description	Syntax
AND	True if both the operands are true	x and y
OR	True if either of the operands is true	x or y
NOT	True if operand is false	Not x

④ Bitwise Operators : It acts on bits and performs bit by bit operation.

Operator	Description	Syntax
&	Bitwise AND	x & y
|	Bitwise OR	x | y
~	Bitwise NOT	~x
^	Bitwise XOR	x ^ y
>>	Bitwise right shift	x>>
<<	Bitwise left shift	x <<

⑤ Assignment Operators : Used to assign values to the variables.

Operator	Description	Syntax
=	Assign value	x = y
+=	Add AND ; add right side operand with left side operand & assign to left operand	a += b a = a+b
-=	Subtract AND	a -= b

*=, /=, %=, //=, **=, &=, |=, ^=, >>=

⑥ Special Operators:

Identity Operators: is and is not are the identity operators both are used to check two values are located on the same part of the memory. Two variables that are equal doesnot imply that they are identical.

is → True if operands are identical.

is not → True if the operands are not identical.

⑦ Membership Operators - in and not in are the membership operators; used to test whether a value or variable is in a sequence

in - True if value is found in the sequence.

not in - True if value is not found in the sequence.

(ii) many ways, like lists, tuples also contain the collection of the items of different data types. The items of the tupel are seperated with comma (,) and enclosed in parenthesis.

(iii) A tuple is a read-only data structure as we can't modify the size and value of the items of a tuple.

** Dictionary:

Dictionary is an ordered set of a key value pair of items. It is like an associative array or

a hash table where each key stores a specific value. key can hold any primitive data type whereas value is an arbitrary python object. The items in the dictionary are seperated with the comma and enclosed in the curly braces {}.

Q) Briefly explain history of python.

Python was conceived in the late 1980s by 'Guido Van Rossum' at centrum wiskunde & Informatica (CWI) in the netherlands as a successor to the ABC lang., capable of exception handling and interfacing with the Amoeba Operating System. Its implementation began in Dec 1989.

→ Python is a widely used general-purpose, high-level programming lang.

→ It was mainly developed for emphasis on code readability, and its syntax allows programmers to express concepts in fewer

4) Explain the features of python.

*) Python is a dynamic, high level, free open source and interpreted programming lang.

*) It supports object-oriented programming as well as procedural oriented programming.

*) In python, we don't need to declare the type of variable because it is a dynamic typed language.

Features in Python:

(1) Easy to code
(2) Free and Open Source
(3) Obj-oriented programming lang
(4) GUI programming support (Graphical user interface)
(5) High-level programming lang.
(6) Extensible features
(7) Python is portable lang.
(8) Python is integrated lang.
(9) Interpreted lang.
(10) Large standard library
(11) Dynamically Typed lang.

5) Justify why python is interactive interpreted lang.

Ans: *) Unlike C/C++ etc, python is an interpreted object oriented programming lang.

*) Python prgm. runs directly from the source code.

*) Each time python programs are executed code is required.

*) python converts source code written by the programmer into intermediate lang. which is again translated into the native lang / machine lang. that is executed. So, python is an Interpreted language.

*) It is processed to runtime by the interpreter.

*) The program need not be compiled before its execution.

*) It is similar to PERL and PHP.