Assignment-2

① What the data types in python? Explain.

Sol: Python has the following data types built in by default, in these Categories:

Text Type	:	str
Numeric Type	:	int, float, complex
Sequence Type	:	tuple, range, list
Mapping Type	:	dict
Set Type	:	set, frozenset
Boolean Type	:	bool
Binary Types	:	bytes, bytearray, memoryview.

Standard data types:

A Variable can hold different 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 908090800l; -0x1.92912l, etc)

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

4) complex (complex numbers like 3.14j, 2.0+2.3j, ... etc)

→ String :- The 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 the 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 "hello python"

(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

(i) A tuple is similar to the list in many ways like lists,

(2)

tuples also contain the collection of the items of different data types. The items of the tuple are seperated with comma(,) and enclosed in parenthesis:

(ii) 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 Orbitary python object. The items in the dictionary are seperated with the comma and enclosed in the curly braces {}

2) Briefly Explain history of python.

Python was conceived in the late 1980's by GUIDO VAN ROSSUM at centrum Wiskunde & informatica (CWI) in the Nether lands as a successor to the ABC language (itself inspired by SETL), capable of exception handling and interfacing with the Amoeba operating system.

Its, implementation began in December 1989.

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

→ It was mainly developed for emphasis on code readability. and its syntax allows programmers to

express concepts in fewer lines of code.

③ Explain all the operators in python

① Arithmetic Operators : used to perform mathematical operations like a addition, subtraction, multiplication and division

Operator	Description	Syntax
+	adds two operands	x+y
-	Subtracts 2 operands	x - y
*	Multiplies 2 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
>	Greaterthan	x>y
==	equal to	x==y
!=	Not equal	x!=y

③

>=	Greater than (or) equal	x >= y

③ Logical operators: It compares the values. It either returns True or false according to the condition.

Operator	Description	Syntax
and	True if both 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
~	Bit wise NOT	~x
^	Bit wise XOR	x ^ y
>>	Bitwise right shift	x >>
	left shift	x <<

⑤ Assignment operators: used to assign the value to the variables

Operator	Description	Syntax
=	Assign value	x = y

+=	Add AND : Add right side Operand with left side Operand and then assign to left operand	a += b a = a+b
-=	subtract AND	a -= b a = a - b
*=	Multiply AND	=> a*= b a = a*b
/=	Division AND	=> a/= b a = a/b
%=	Modulus AND	=> a %= b a = a%b
//=	Divide (floor) AND	=> a //= b a = a//b
**=	Exponent AND :	=> a **= b a = a**b
&=	AND on	=> a &= b a = a&b
|=	Perform Bitwise OR	=> a |= b a = a|b
^=	perform Bitwise XOR	=> a ^= b a = a^b
>>=	Perform Bitwise right shift	=> a>>= b a = a>>b

(6) Special operators :

i) Identity operators - is and is not are the identity operators both are used to check ; to values are located

on the same part of the memory. Two variables that are equal does not imply that they are identical

is → True if the operands are identical

is not → True if the operands are not identical

(iii) · ~~Membership~~ 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.

4) Explain the features of python.

→ Python is a dynamic, high level, free open source and interpreted programming language.

→ It supports Object - oriented programming as well as procedural oriented programming.

→ In python, we don't need to declare the type of variable becz it is a dynamic typed language

Feature's on python :

1) easy to code
2) free and open source
3) Object - oriented programming language
4) GUI programming support (Graphical user interfaces)
5) High - level programming language.
6) Extensible features

7) Python is portable language

8) Python is Integrated language

9) Interpreted language.

10) Large standard library

11) Dynamically Typed language.

5) Justify why Python is interactive interpreted language

→ unlike c/c++ ectc, Python is a interpreted object oriented programming language.

→ python program 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 language which is again translated into the native language / machine language that is excecuted. So python is an interpreted language.

→ It is processed at runtime by the interpreter.

→ The program need to be compiled before its execution

→ It is Similar to PERL and PHP.