Assignment - 2 2056, B2

1) What are the data types in python? Explain

(i) Numbers:

Number data types store numeric values. Number objects are created when you assign a value to them

(ii) Strings:

Strings in python are identified as a contiguous set of characters represented in the quotation marks. python allows either pair of single (or) double quotes

(iii) Lists:

Lists are the most versatile of python's compund data types. A list contains items seperated by commas and enclosed with in square brackets ([]).

(iv) Tuples:

A tuple is another sequence data type that is similar to the list. A tuple consists of a number of values separated by commas. Unlike lists, however, tuples are enclosed with in parenthesis

(v) Dictionary:

python's dictionaries are kind of hash-table type. They work like associative arrays (or) hashes found in perl and

consists of key-value pairs. A dictionary key can be almost any python type, but are usually numbers (or) strings. Values, on the other hand, can be any arbitrary python object. Dictionaries are enclosed within curly braces

2) Briefly explain history of python.

→ python is an interpreted, high-level, general-purpose programming language

→ It was created by Guido Van Rossum in 1991 and further developed by the python software foundation

→ It was designed with an emphasis on code readability, and its syntax allows programmers to express their concepts in fewer lines of code

→ python is a programming language that lets you work quickly and integrate systems more efficiently

3) Explain all the operators in python

→ operators are special symbols that represent computations like addition and multiplication. The values the operator is applied to are called operands

→ Arithmetic operators:
The operators +, -, *, /, and ** perform addition, subtraction, multiplication, division and exponentation, as in the

following examples:

-> 20+32
-> hour-1
-> hour * 60+ minute
-> minute / 60
-> 5++ 2
-> (5+9) * (15-6)

Comparision operators:

The operators compare the values on either side of the operand and determine the relation between them. It is also reffered as relational operators. Various comparision operator ~~are~~ (==, are (==, !=, <, >, <=, >= etc)

Ex:

```
x = 4
x = 5
print (('x>y' is, x>y))
```

Assignment operators:

python assignment operators are used for assigning the value of the right operand to the left operand. Various assignment operators used in python are (+=, -=, *=, /= etc)

Logical operators:

Logical operators are the and, or, not operators

operator	Meaning	example
and	true if both the operands are true	x and y

or	True if either one of the operands is true	x or y
not	True if operand is false (complements the operand)	not x

Ex:

```
x = True
y = False
print ('x and y')
print ('x or y')
print ('not x')
```

Identity operators:

→ is, is not are the identity operators in python. They are used to check if two values (or) variables are located on the same part of the memory. Two variables that are equal does not imply that they are identical

operator	Meaning	Example
is	True if operands are identical (refer to the same object)	x is true

is not	True if the operands are not identical (do not refer to the same object	2 is not True

Bit Wise operators:

Bit Wise operators act on operands as if they were strings of binary digits. They operate bit by bit, hence the name
For example, 2 is 10 in binary and 7 is 111

4) Explain the features of python

(i) Simple → It is easy to understand. Syntax, Simple setup and has many practical applications in Web development. It is Simple as compared to the C and Java

(ii) Easy to learn → It is easy to learn than other languages and the code is very short compared to C and Java

(iii) Free and open source → In simple terms, you can freely distribute copies of this software, read the software's source code, make changes to it

(iv) High level language → python is a high level language

(v) portable ——> python can run any OS.
Also, we use the python code written on one system on to another system without making any changes to the code

(vi) object oriented ——> python is object-oriented so it is organised around objects rather than "actions" and data rather than logic

(vii) Extensible ——> This feature is provided to the user as to extend python from its initial state
An extensible software program, for example, might support add-ons (or) plug-ins that add extra functionality to the program

(viii) Interpreted ——> In this feature the code which execute instruction directly and freely, without previously compiling a program into machine language instructions

5) Justify why python is interactive interpreted language

-> python program runs directly from the source code

-> each line python programs are executed executed code if required

→ python converts source code written by the programmer into intermediate language which is again translated into the machine language that is executed. so python is an interpreted language

→ It is processed at our time by the interpreter

→ The program need not be compiled before its execution

→ It is similar to perl and php

→ python is also interactive where it can prompt and interact with the interpreter directly to write the programs

→ It supports the object-oriented style of the technique which encapsulates the code within th objects