Python Assignment

1)Q) Define a list and tuple in Python Provide some examples?

A) List:- In Python, a list is an ordered collection of elements, which can be of any data types such as integers, floats, strings, or even other lists. Lists are mutable, meaning you can change the elements of a list after it has been created.

Ex:- my_list1 = [1, 2, 3, 'four', 5, 7]

numbers = [0, 1, 2, 3, 4]

Fruits = ['Mango', 'banana', 'apple', 'grapes']

Tuple:- Tuple is similar to a list in that it is an ordered collection of elements, but it is immutable. once a tuple is created, its elements cannot be changed.

Ex:- my_tuple = (1, 2, 3, 'four', 5)

numbers = (0, 1, 2, 3, 4)

fruits = ('Mango', 'banana', 'apple', 'grapes')

2Q) What is a name space in Python?

A) A namespace is a mapping between names and objects. It is essentially a system that keeps the track of the names of variables, functions and other objects in your code and their corresponding objects. Name spaces are implemented as dictionaries in Python.

There are different types of namespaces in Python:

1) Builtin namespace: It contains names of all built-in functions, such as. 'Print()', 'len()', 'input()' etc..

2) Global namespace: This contains names of variables, functions, classes and other objects defined at the top level of a module or script.

3) Local namespace: This contains names of variables, functions, and objects defined within a function or method.

3Q) What is the difference between local variables and global variable?

A) A local variable is defined within the function or method. and is only accessible within that function or method. on the other hand, a global variable is a variable. that is defined at the top level of a module or script and is accessible throughout the Program. Local variables have a limited scope and a short lifetime, while global variables have a global scope and a longer lifelime.

4Q) What is an IDE? Mention some common IDEs that could be used with Python?

A) An IDE (Integrated Development Environment) is a software application that provides a comprehensive environment for writing, testing, and debugging software. It

typically includes features such as code highlighting, code completion, debugging tools, and integrated version control systems. Some of the common Python IDEs are

1) Pycharm
2) spyder
3) Visual Studio Code.
4) Jupyter Notebook
5) Sublime Text.

5) What are modules in Python? Provide some examples?

A) In Python, a module is a file containing Python definitions and statements. It can define functions, classes, and variables, and can also include runnable code. Modules are used to organize code into logical groups, making it easier to maintain, reuse, and share code. b/w different Python Projects. Some examples of modules in Python are.

1) math :- contain mathematical functions like 'sqrt()', 'log()', 'sin()'.
2) random :- Provides a set of functions for generating random numbers
3) datetime :- Provides classes for working with date and time.
4) os :- Provides a set of functions for interacting with os.
5) json :- Provides functions for encoding and decoding. JSON data. It is commonly used for working with web API that return data in JSON format.

6) what is the difference b/w array and list?

A) Arrays are more efficient in terms of memory and offer a few more specialized functionalities while lists are more versatile and easier to work with for general purpose programming. The main differences are.

1) Data type :- Array can only hold values of single data type but lists can hold values of any data type.

2) Memory allocation :- Arrays can allocate a contiguous block of memory, whereas the memory used by list is spread out across multiple non-contiguous block.

3) Functionality :- Arrays offer a few more functionalities than list., such as mathematical operations. list offer more flexibility in terms of inserting., deleting & modifying elements.

7) what are operators ? Provide some examples?

A) Operators are special symbols or keywords used to perform various operations on values or variables. Python supports a wide range of operators, including

1) Avithmetic operators :- for mathematical operations such as addition, subtraction, multiplication and division. (+, -, *, /, //, %, **).

2) Assignment operators :- for assigning values to operators.
(=, +=, -=, *=, /=, %=).

3) Comparision operators :- Used to compare values and return a Boolean value
(>, <, ==, != , >= , <=).

4) Logical operators :- To perform logical operations such as AND, OR, NOT.
(x<y and y<z, x<y or y>z, not(x=y)).

5) Bitwise operators :- To perform bitwise operations on binary numbers.
(&, |, ^, ~, <<, >>).