PYTHON – ASSIGNMENT 2

1) What is PYTHONPATH?

PYTHONPATH is an environment variable which the user can set to add additional directories that the user wants Python to add to the sys.path directory list. In short, we can say that it is an environment variable that you set before running the Python interpreter. Mostly we should not set these variables as they are not needed for Python to execute normal programs because it knows where its standard library is to be found. PYTHONPATH is used to help in importing the modules. So, when you import modules in your Python scripts, PYTHONPATH is also checked to see which directories might contain the imported module.

2) What are Python modules? Name some commonly used built-in modules in Python?

In programming terminology, function is a separate, complete and reusable software component. Long and complex logic in a program is broken into smaller, independent and reusable blocks of instructions usually called a module, a subroutine or function. It is designed to perform a specific task that is a part of entire process. This approach towards software development is called modular programming. Such a program has a main routine through which smaller independent modules (functions) are called upon. Each When called, a function performs a specified task and returns the control back to the calling routine, optionally along with result of its process.

Python interpreter has a number of built-in functions. They are always available for use in every interpreter session. some commonly used built in modules are,

- os module.
- random module.
- math module.
- time module.
- sys module.

- collections module.
- statistics module.

3) What are local variables and global variables in Python?

Global variables are those which are not defined inside any function and have a global scope whereas local variables are those which are defined inside a function and its scope is limited to that function only. In other words, we can say that local variables are accessible only inside the function in which it was initialized whereas the global variables are accessible throughout the program and inside every function.

4) Is Python case sensitive?

Python is a case-sensitive language because it differentiates the lower case and uppercase identifiers. For, example if you write SUM, and sum in python programming then both will be considered as different identifiers. Similar things happen with the python variables.

5) What is type conversion in Python?

The process of converting the value of one data type (integer, string, float, etc.) to another data type is called type conversion. Python has two types of type conversion. Implicit Type Conversion and Explicit Type Conversion.

In **Implicit type conversion**, Python automatically converts one data type to another data type. This process doesn't need any user involvement.

In **Explicit Type Conversion**, users convert the data type of an object to required data type. We use the predefined functions like `int()`, `float()`, `str()`, etc to perform explicit type conversion.This type of conversion is also called typecasting because the user casts (changes) the data type of the objects.

- Type Conversion is the conversion of object from one data type to another data type.

- Implicit Type Conversion is automatically performed by the Python interpreter.
- Python avoids the loss of data in Implicit Type Conversion.
- Explicit Type Conversion is also called Type Casting, the data types of objects are converted using predefined functions by the user.
- In Type Casting, loss of data may occur as we enforce the object to a specific data type.

6) Is indentation required in Python?

Indentation is a very important concept of Python because without proper indenting the Python code, we will end up seeing IndentationError and the code will not get compiled.
In simple terms indentation refers to adding white space before a statement.
consider a situation where we are reading a book and all of a sudden all the page numbers from the book went missing. So you don't know, where to continue reading and you will get confused. This situation is similar with Python. Without indentation, Python does not know which statement to execute next or which statement belongs to which block. This will lead to IndentationError.

What is the difference between Python Arrays and lists

List	Array
Can consist of elements belonging to different data types	Only consists of elements belonging to the same data type
No need to explicitly import a module for declaration	Need to explicitly import a module for declaration
Cannot directly handle arithmetic operations	Can directly handle arithmetic operations

Can be nested to contain different type of elements	Must contain either all nested elements of same size
Preferred for shorter sequence of data items	Preferred for longer sequence of data items
Greater flexibility allows easy modification (addition, deletion) of data	Less flexibility since addition, deletion has to be done element wise
The entire list can be printed without any explicit looping	A loop has to be formed to print or access the components of array
Consume larger memory for easy addition of elements	Comparatively more compact in memory size