PYTHON - ASSIGNMENT 1

1) What is Python? Why is it so popular?

The python language is one of the most accessible programming languages available because it has simplified syntax and not complicated, which gives more emphasis on natural language. Due to its ease of learning and usage, python codes can be easily written and executed much faster than other programming languages.

2) What are the key features of Python?

Python provides many useful features which make it popular and valuable from the other programming languages. It supports object-oriented programming, procedural programming approaches and provides dynamic memory allocation. few essential features are listed below.

Easy to Learn and Use

Python is easy to learn as compared to other programming languages. Its syntax is straightforward and much the same as the English language. There is no use of the semicolon or curly-bracket, the indentation defines the code block. It is the recommended programming language for beginners.

Expressive Language

Python can perform complex tasks using a few lines of code. A simple example, the hello world program you simply type **print("Hello World")**. It will take only one line to execute, while Java or C takes multiple lines.

Interpreted Language

Python is an interpreted language; it means the Python program is executed one line at a time. The advantage of being interpreted language, it makes debugging easy and portable.

Cross-platform Language

Python can run equally on different platforms such as Windows, Linux, UNIX, and Macintosh, etc. So, we can say that Python is a portable language. It enables programmers to develop the software for several competing platforms by writing a program only once.

Free and Open Source

Python is freely available for everyone. It is freely available on its official website www.python.org. It has a large community across the world that is dedicatedly working towards make new python modules and functions. Anyone can contribute to the Python community. The open-source means, "Anyone can download its source code without paying any penny."

Object-Oriented Language
Python supports object-oriented language and concepts of classes and objects come into existence. It supports inheritance, polymorphism, and encapsulation, etc. The object-oriented procedure helps to programmer to write reusable code and develop applications in less code.

Extensible
It implies that other languages such as C/C++ can be used to compile the code and thus it can be used further in our Python code. It converts the program into byte code, and any platform can use that byte code.

Large Standard Library
It provides a vast range of libraries for the various fields such as machine learning, web developer, and also for the scripting. There are various machine learning libraries, such as Tensor flow, Pandas, Numpy, Keras, and Pytorch, etc. Django, flask, pyramids are the popular framework for Python web development.

GUI Programming Support
Graphical User Interface is used for the developing Desktop application. PyQT5, Tkinter, Kivy are the libraries which are used for developing the web application.

Integrated
It can be easily integrated with languages like C, C++, and JAVA, etc. Python runs code line by line like C,C++, Java. It makes easy to debug the code.

Embeddable
The code of the other programming language can use in the Python source code. We can use Python source code in another programming language as well. It can embed other language into our code.

3) What type of language is Python? Programming or scripting?

Python is an interpreted language. Python uses an interpreter to translate and run its code. Hence Python is a scripting language.

4) What is pep 8?

 PEP 8 is a coding convention, a set of recommendations, about how to write your Python code more readable. The PEP is an abbreviation form of **Python Enterprise Proposal**. Writing code with proper logic is a key factor of programming, but many other important factors can affect the code's quality. The developer's coding style makes the code much reliable, and every developer should keep in mind that Python strictly follows the way of order and format of the string. Adaptive a nice coding style makes the code more readable. The code becomes easy for end-user. PEP 8 is a document that provides various guidelines to write the readable in Python. PEP 8 describes how the developer can write beautiful code.

5) Python an interpreted language. Explain

An interpreter takes the code you write an executes (runs) whatever actions we specified creates the variables we created, and does a lot of behind-the-scenes work to ensure it runs smoothly or tells you about errors.
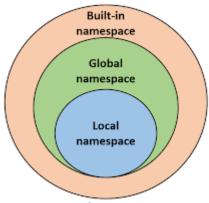
Python is called an interpreted language because it goes through an interpreter, which turns code you write into the language understood by our computer's processor. Lateron when we work on a project on our computer, we will download and use the Python interpreter to be able to write Python code and execute it on our own.

6) How is memory managed in Python?

Memory management in Python involves a private heap containing all Python objects and data structures. The management of this private heap is ensured internally by the Python memory manager. The allocation of heap space for Python objects is done by Python's memory manager. Python also has an inbuilt garbage collector, which recycles all the unused memory and so that it can be made available to the heap space.

7) What is namespace in Python?

A namespace is a system that has a unique name for each and every object in Python. An object might be a variable or a method. Python itself maintains a namespace in the form of a Python dictionary.

Type of Namespaces