***Module -5 Python Programming Assessment:***

***1. Explain in your own words what is Python? (300 Words)***

Python is an interpreted, object-oriented, high-level programming language. Its high-level built in data structures, combined with dynamic typing and dynamic binding, make it very attractive for Rapid Application Development. The Python interpreter and the extensive standard library are available in source or binary form without charge for all major platforms, and can be freely distributed. Besides web and software development, Python is used for data analytics, machine learning, and even design.

Advantages of using python are:

1. Python is a high-level, interpreted, and general-purpose dynamic programming language that focuses on code readability.
2. It has fewer steps when compared to Java and C.
3. Python ranks among the most popular and fastest-growing languages in the world.
4. Python is a powerful, flexible, and easy-to-use language.
5. Versatile, easy to use and fast to develop.
6. Open source with a vibrant community.
7. Has all the libraries you can imagine.

Python provides a large standard library that includes areas like internet protocols, string operations, web services tools, and operating system interfaces.

Python language is developed under an OSI-approved open-source license, which makes it free to use and distribute, including for commercial purposes.

Python offers excellent readability and uncluttered simple-to-learn syntax which helps beginners to utilize this programming language.

Python has built-in list and dictionary data structures that can be used to construct fast runtime data structures.

Python has a clean object-oriented design, provides enhanced process control capabilities, and possesses strong integration and text processing capabilities and its own unit testing framework, all of which contribute to the increase in its speed and productivity.

Applications of Python

1. GUI based desktop applications and Image processing and graphic design applications
2. Games
3. Web frameworks and web applications
4. Business applications and Enterprise
5. Operating systems
6. Language development
7. Prototyping

***2. Explain Data Python Data Types (200 Words)***

Data types in python:

1. Numeric:

* Integers – value is represented by int class. It contains positive or negative whole numbers (without fraction or decimal).
* Float – value is represented by float class. It is a real number with floating point representation. It is specified by a decimal point.
* Complex Numbers – Complex number is represented by complex class. It is specified as (real part) + (imaginary part) j.

1. Sequence Type:

* String- A string is a collection of one or more characters put in a single quote, double-quote or triple quote. In python there is no character data type, a character is a string of length one. It is represented by str class.
* List- Lists are just like the arrays, declared in other languages which is an ordered collection of data. It is very flexible as the items in a list do not need to be of the same type
* Tuple - tuple is also an ordered collection of Python objects. The only difference between type and list is that tuples are immutable, tuples cannot be modified after it is created.

1. Boolean:

* Data type with one of the two built-in values, True or False. It is denoted by the class bool.

1. Set:

* Set is an unordered collection of data type that is iterable, mutable and has no duplicate elements.

5. Dictionary:

* Dictionary in Python is an ordered collection of data values, used to store data values like a map, which, unlike other Data Types that hold only a single value as an element, dictionary has a key value pair.

***3. Explain in your own words What is a function? (250 Words)***

A function is a block of organized, reusable code that is used to perform a single, related action. Functions provide better modularity for application and a high degree of code reusing. We can use many built-in functions like print() and also create our own functions. These functions are called user-defined functions.

default, a function must be called with the correct number of arguments. Meaning that if function expects 2 arguments, we have to call the function with 2 arguments, not more, and not less.

Example:

def my\_function():  
  print("Hello World")

Defining a Function, we need to follow some rules like:

1. Function begin with the keyword def followed by the function name and parentheses ( ( ) ).
2. Any input parameters or arguments should be placed within these parentheses.
3. The code block within every function starts with a colon (:).
4. The statement return expression exits a function. A return statement with no arguments is the same as return None.

***4.Explain the Python print statement (250 Words)***

The print() function prints the specified message to the screen, or other standard output device.

The simplest way to produce output is using the print() function where we can pass zero or more expressions separated by commas.

This function converts the expressions you pass into a string before writing to the screen. Returns: It returns output to the screen. It's all about flexibility.

But the real key to the print function is somewhat subtle and it all has to do with flexibility, both for the users and the Python development team.

For users, making print a function lets you use print as an expression, unlike the print statement which can only be used as a statement

Example:

1. print("Hello World")

Output: Hello World

1. print ("Welcome to", end = ' ')

print ("TKH", end = '!')

output: Welcome to end THK!