**PYTHON ASSIGNMENT (6) OOPS THEORY**

1. Define Object Oriented Programming Language?

**Object-oriented programming:** As the name suggests, Object-Oriented Programming or OOPs refers to languages that uses objects in programming. Object-oriented programming aims to implement real-world entities like inheritance, hiding, polymorphism etc. in programming. The main aim of OOP is to bind together the data and the functions that operate on them so that no other part of the code can access this data except that function.

1. List down the Benefit of Oops?

1. Simplicity: software objects model real world objects, so the complexity is reduced and the program structure is very clear;

2. Modularity: each object forms a separate entity whose internal workings are decoupled from other parts of the system;

3. Modifiability: it is easy to make minor changes in the data representation or the procedures in an OO program. Changes inside a class do not affect any other part of a program, since the only public interface that the external world has to a class is through the use of methods;

4. Extensibility: adding new features or responding to changing operating environments can be solved by introducing a few new objects and modifying some existing ones;

5. Maintainability: objects can be maintained separately, making locating and fixing problems easier;

6. Re-usability: objects can be reused in different programs

1. Differentiate between function and method?

A function is a piece of code that is called by name. It can be passed data to operate on (i.e. the parameters) and can optionally return data (the return value). All data that is passed to a function is explicitly passed.

A method is a piece of code that is called by a name that is associated with an object. In most respects it is identical to a function except for two key differences:

A method is implicitly passed the object on which it was called.

A method is able to operate on data that is contained within the class (remembering that an object is an instance of a class - the class is the definition; the object is an instance of that data.

this is a simplified explanation, ignoring issues of scope etc.

1. Define the following terms:
2. **Class**

Class

A class in object-oriented programming serves as a blueprint for the object. A class can be considered as a map for the house. You can get an idea of what the house looks like by simply seeing the map. However, a class itself is nothing. For instance, a map is not a house, it only explains how the actual house will look.

The relationship between a class and object can be understood by looking at the relationship between a car and an Audi. An Audi is actually a car. However, there is no such thing as a car only. A car is an abstract concept, it is actually implemented in the form of Toyota, Ferrari, Honda, etc.

The keyword class is used in order to create a class in Python. The name of the class follows the class keyword, followed by the colon character. The body of the class starts on a new line, indented one tab from the left.

1. **Object**

Objects

Earlier, we said that a class provides a blueprint. However, to actually use the objects and methods of a class, you need to create an object out of that class. There are few class methods and attributes that can be used without an object, which we will see in the later section. For now, just keep in mind that by default, we need to create an object of a class before we can use its methods and attributes.

An object is also called an instance; therefore, the process of creating an object of a class is called instantiation. In Python, to create an object of a class we simply need to write the class name followed by opening and closing parenthesis.

1. **Attribute**

Attributes

In the previous section, we saw how we can create objects of a class and can use those objects to access the attributes of a class.

In Python, every object has some default attributes and methods in addition to user-defined attributes. To see all the attributes and methods of an object, the built-in dir() function can be used. Let's try to see all the attributes of the car\_b object that we created in the last section. Execute the following script:

1. **Behavior**

Behavior-driven development using Python's 'behave' framework can help your team achieve better collaboration and test automation.