ADVANCED OBJECT ORIENTED PROGRAMMING CONCEPTS

Main concepts of OOPs

- Class
- Objects
- Data Abstraction
- Encapsulation
- Polymorphism
- Inheritance

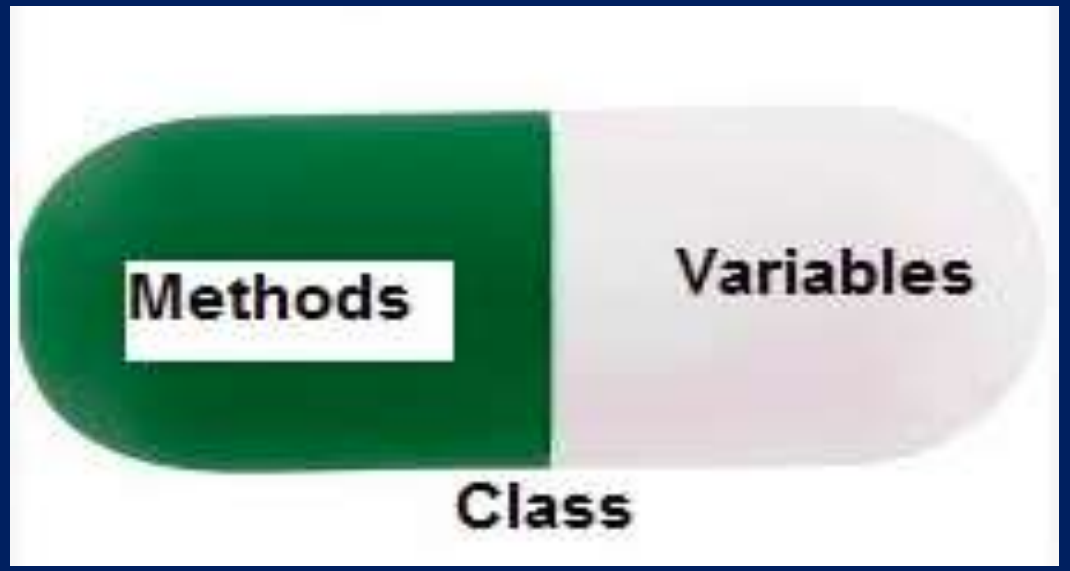
Data Abstraction

- Hides the unnecessary code details from the user.
- Also, when we do not want to give out sensitive parts of our code implementation and this is where data abstraction came.
- Data Abstraction in Python can be achieved through creating abstract classes.

Encapsulation

- Wrapping data and the methods that work on data within one unit.
- Puts restrictions on accessing variables and methods directly and can prevent the accidental modification of data.

A class is an example of encapsulation as it encapsulates all the data that is member functions, variables, etc.



Polymorphism

- The word polymorphism means having many forms.
- Poly means Many and Morph means Shapes.
- In programming, polymorphism means the same function name (but different signatures) being used for different types.

In Python, Polymorphism process can be implemented in two main ways namely Method overloading and Method overriding.

Inheritance

- Capability of one class to derive or inherit the properties from another class.
- The class that derives properties is called the derived class or child class
- The class from which the properties are being derived is called the base class or parent class.

Types of Inheritance

Single Inheritance:
Enables a derived class to inherit characteristics from a single-parent class.

Multilevel Inheritance:
Enables a derived class to inherit properties from an immediate parent class which in turn inherits properties from his parent class.

Multiple Inheritance:
Enables one derived class to inherit properties from more than one base class.