OOPS in Python: Complete Explanation with Shape Class Example

1. What is OOPS?

Object-Oriented Programming (OOP) is a programming paradigm based on the concept of objects that contain both data (attributes) and methods (functions). It helps in organizing complex code by grouping related variables and functions into objects.

4 Pillars of OOPS

1. Encapsulation: Wrapping the data and methods into a single unit (class).

2. Inheritance: Deriving a new class from an existing class.

3. Polymorphism: Using a single method name but having different implementations.

4. Abstraction: Hiding unnecessary details and showing only essential information.

2. Class Method vs Static Method in Python

Class Method

A class method is a method that is bound to the class and not the instance of the class. It can access and modify the class state but cannot modify instance-specific attributes.

Static Method

A static method is a method that does not depend on the class or instance. It behaves just like a regular function but belongs to the class's namespace.

Difference Between Class Method and Static Method

Class Method: Bound to the class and can modify class-level data.

Static Method: Independent of the class, acts like a regular function but belongs to the class.