Object-Oriented Programming

Introduction to OOP Concepts

- Object-Oriented Programming (OOP) is a programming paradigm based on **objects** that represent real-world entities.
- It combines **data and methods** into a single unit, making programs more **organized, reusable, and easy to maintain**.

Using Python

- Python is an object-oriented programming language that fully supports OOP concepts.
- Its **simple syntax** and **readability** make it easy to create and manage classes and objects efficiently.

What is OOP?

Programming paradigm based on objects

- Object-Oriented Programming (OOP) is a **programming paradigm based on objects**.

- Objects represent real-world entities and combine **data (attributes)** and **behavior (methods)** into a single unit.

Objects represent real-world entities

- In Object-Oriented Programming, objects are used to represent real-world entities such as a student, car, or bank account.
- Each object contains relevant data and actions related to that entity.

Key OOP Concepts

- Class

- Object

- Encapsulation

- Inheritance

- Polymorphism

- Abstraction

1. Class :
- Blueprint of an object
- Defines attributes and methods

2. Object :
- Instance of a class
- Represents real-world entity

3. Encapsulation :
- Wrapping data and methods together
- Data hiding using access modifiers

4. Inheritance :

- One class inherits properties of another
- Promotes code reusability

5. Polymorphism :

- Same function name, different behavior
- Method overriding & overloading

6. Abstraction :

- Hides implementation details
- Shows only essential features

7. Advantages of OOP :

- Code reusability
- Easy maintenance
- Scalability
- Security

Thank You