

Oops Principles or Concepts

1. **class** : A class in Java is a blueprint or template used to create objects. It defines the data (variables) and the behavior (methods) that the objects created from the class will have

A class is a user-defined data type that groups fields (variables) and methods (functions) into one single unit.

2. **object** : An object is a real-world entity or instance of a class. It represents a thing that has state (data/variables) and behavior (methods/functions).

An object is a physical entity created from a class.

It holds actual values for the variables and can perform actions defined in the class.

3. **Encapsulation** : Encapsulation is the process of wrapping data (variables) and methods (functions) into a single unit called a class.

It protects the internal data of an object from outside interference.

4. **Abstraction**: Abstraction is the process of hiding internal details and showing only essential information.

You drive a car without knowing the internal working of its engine.

5. **Inheritance** : Inheritance allows a new class (subclass/child) to inherit properties and behavior (methods) from an existing class (superclass/parent). Promotes code reusability.

6. **Polymorphism** : Polymorphism means many forms – the ability to perform the same action in different ways.

Types:

- Compile-time polymorphism (Method Overloading)
- Run-time polymorphism (Method Overriding)