02-Class and Object Theory

Introduction

- Java is primarily an object-oriented programming language. While it extensively uses objects and classes to structure code, it also includes primitive data types. Classes and objects are fundamental concepts in Java's implementation of Object-Oriented Programming (OOP), used to represent real-world concepts and entities.

Understanding Objects

- An object has properties (attributes) and functions (methods)—it knows something and does something. For example, a pen has attributes such as height, dimensions, and color, and it has functions such as writing.

Java Classes

- A class in Java is a blueprint for creating objects. It defines common behaviors and properties shared by all objects of that class. Classes are user-defined data types that act as templates for objects.

Java Objects

- An object in Java is an instance of a class. It is a basic unit of Object-Oriented Programming and represents real-life entities.

Object-Oriented Programming (OOP)

- In OOP, an object has properties (attributes) and behaviors (methods). To create an object, the first step is to create a class. The class serves as the blueprint for the object.
- Once the class is created, the Java compiler compiles the class file into bytecode, which is then used to generate the object. The JVM executes the bytecode and manages object creation at runtime.