OOPs in java in one month

Day Topics

- 1 What is OOP? Principles (Abstraction, Encapsulation, Inheritance, Polymorphism)
- 2 Classes & Objects Constructors, this keyword
- 3 Static vs Non-static members
- 4 Inheritance super, extends, method overriding
- 5 Polymorphism Compile-time (method overloading), Run-time (method overriding)
- 6 Encapsulation and Access Modifiers (private, public, protected)
- 7 Practice: Implement a basic Student-Teacher system with inheritance & polymorphism

Week 2: Dive Deeper into OOP Features

Q Topics to Cover:

Day Topics

- 8 Abstraction Abstract classes and methods
- 9 Interfaces Multiple inheritance via interfaces
- 10 Interface vs Abstract Class
- 11 Final keyword, static blocks, initializer blocks
- 12 Inner classes (regular, static, anonymous, local)
- 13 Wrapper classes, Autoboxing/Unboxing
- 14 Practice: Create a shape drawing program using interfaces and abstraction

Week 3: Collections, Generics & Real-world Modelling

Topics to Cover:

Day Topics

15 Object class methods (toString(), equals(), hashCode(), etc.)

Day Topics

- 16 Exception Handling Basics (try, catch, finally)
- 17 Custom Exceptions
- 18 Collections Framework ArrayList, HashMap, HashSet, LinkedList
- 19 Generics Generic classes & methods
- 20 Java Comparable vs Comparator
- Practice: Build a Library Management System using OOP, collections & exception handling

Week 4: Design Principles, Patterns, and Mini-Project

Q Topics to Cover:

Day Topics

- 22 SOLID Principles
- 23 Composition vs Inheritance
- 24 Common Design Patterns Singleton, Factory, Strategy
- 25 UML Basics Class Diagrams
- 26 MVC Architecture
- Practice applying Design Patterns (Factory for Shape creation, Strategy for payment methods)
- 28 Mini Project Planning (eg. E-commerce cart, Hospital system)
- Build the Mini Project with full OOP concepts, comments, and reusable structure

Resources to Use:

- Book: Head First Java
- Online: Java Brains, Telusko YouTube, GeeksforGeeks OOPs in Java
- Compiler: IntelliJ IDEA or Eclipse

Mini Project Ideas (Pick one in Week 4):

- Hospital Management System
- Student Record System
- Online Bookstore
- Hotel Booking System