

Java Complete Guide

1. Introduction to Java

- Java is a high-level, object-oriented programming language developed by Sun Microsystems (now owned by Oracle).
- It follows the principle of "Write Once, Run Anywhere" (WORA).
- Used for Web, Mobile, Desktop, and Enterprise applications.

2. Java Basics

- Variables and Data Types: int, float, double, char, boolean, String
- Operators: Arithmetic, Logical, Relational, Bitwise
- Control Statements: if-else, switch-case, loops (for, while, do-while)
- Functions and Methods
- Arrays and Strings

3. Object-Oriented Programming (OOP) in Java

- Classes and Objects
- Constructors
- Encapsulation, Inheritance, Polymorphism, Abstraction
- Method Overloading and Overriding

4. Exception Handling

- Try-Catch-Finally
- Throw and Throws
- Custom Exceptions

5. Collections Framework

- List (ArrayList, LinkedList)
- Set (HashSet, TreeSet)
- Map (HashMap, TreeMap)

6. Java 8 Features

- Lambda Expressions
- Streams API
- Functional Interfaces

7. Multithreading & Concurrency

- Thread Class and Runnable Interface
- Synchronization
- Executor Framework

8. Java with Databases (JDBC & Hibernate)

- JDBC (Java Database Connectivity)
- Hibernate ORM (Object Relational Mapping)
- CRUD Operations with MySQL/PostgreSQL

9. Spring Boot (Backend Development)

- Introduction to Spring Framework
- Building REST APIs with Spring Boot
- Authentication & Security (JWT, OAuth)
- Microservices Architecture

10. Microservices & Cloud Deployment

- Spring Boot Microservices
- Docker & Kubernetes
- Deploying Java Applications on AWS, Azure

11. Java Interview Questions & Answers

- Common Java Interview Questions
- Spring Boot Interview Questions
- Java Coding Challenges for Interviews