

Java Full Stack Development

1. Java Fundamentals (Core Java)

- A. Introduction to Java, history, and features
- B. Java Virtual Machine (JVM), JRE, JDK concepts
- C. Variables, data types, operators, control structures
- D. Object-Oriented Programming (OOP): classes, objects, inheritance, polymorphism, abstraction, encapsulation
- E. Exception handling
- F. Collections framework
- G. Multithreading basics
- H. File I/O operations

2. Web & Front-End Basics

- A. Introduction to HTML5
- B. CSS3 basics
- C. JavaScript fundamentals (ES6+ basics)
- D. DOM manipulation and event handling
- E. Responsive design overview

3. Database and Persistence

- A. Relational databases overview (e.g., MySQL/PostgreSQL)
- B. SQL basics (CRUD operations)
- C. JDBC (Java Database Connectivity)
- D. Prepared and Callable Statements
- E. ORM introduction (Hibernate)
- F. Data source configuration

4. Java Enterprise Web Technologies

- A. Servlets
- B. JSP (JavaServer Pages)
- C. Session management
- D. MVC architecture using JSP/Servlets
- E. JSTL and tag libraries
- F. Web services basics (REST vs SOAP)

5. Spring Framework Core

- A. Introduction to Spring and its modules
- B. Dependency Injection (DI) & Inversion of Control (IoC)
- C. Spring Core configurations
- D. Bean lifecycle and scopes

- E. Using SpEL and annotations

6. Spring Boot

- A. Spring Boot overview and auto-configuration
- B. Spring Boot project structure & starters
- C. Application properties and profiles
- D. REST API development with Spring Boot
- E. Spring Boot Actuator
- F. Testing Spring Boot applications (JUnit)

7. Security & Data Access

- A. Spring Data JPA
- B. Entity relationships and mapping
- C. Query methods
- D. Spring Security basics
- E. Authentication & authorization

8. Front-End Integration

- A. REST API consumption (front-end basics)
- B. Client-side HTTP / fetch calls
- C. Modern front-end frameworks overview (React or Angular)
- D. State and routing basics

9. Advanced Enterprise Features

- A. Microservices architecture overview
- B. Message queues (optional)
- C. Logging and monitoring
- D. Caching basics

10. DevOps & Deployment

- A. Build tools: Maven/Gradle
- B. Version control with Git/GitHub
- C. Docker containerization basics
- D. CI/CD overview (Jenkins/GitHub Actions)
- E. Deployment (AWS/Heroku basics)

Practical:

Hands-on exercises include:

- Java syntax & OOP implementation labs
- JDBC & SQL database labs
- Servlet/JSP small applications
- Spring Boot REST API projects
- Spring Security and JPA integration exercises
- Full stack integration project (front-end + backend)