

React Full Stack Development with Java Spring Boot

Duration: 5 days

Prerequisites: Knowledge of Java and Web Development

Day 1

Module 1: Environment Setup & Full-Stack Architecture Overview

- Full Stack development landscape overview
 - Role of React (frontend) and Spring Boot (backend)
 - Setting up development environment
 - Node.js + npm installation
 - Spring Boot + JDK setup
 - IDEs (VS Code, IntelliJ)
 - Creating Git repository and version control basics
 - Project architecture overview – Monolith vs Microservices
 - **Lab:** Setup React and Spring Boot boilerplate apps, verify REST endpoint from Postman
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Module 2: React Fundamentals

- React 18+ features and JSX
 - Functional components and hooks (useState, useEffect)
 - Props and state management
 - Handling events, conditional rendering, and lists
 - Folder structure for scalable React app
 - **Lab:** Build a simple Todo/Task manager frontend
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Day 2

Module 3: Advanced React Concepts

- React Router v6 and navigation
 - Controlled vs uncontrolled components
 - Forms and validation
 - Reusable components and composition patterns
 - Error boundaries and component lifecycle
 - **Lab:** Create a multi-page React application with navigation and form validation
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Module 4 – State Management & API Integration

- Lifting state up and context API
- Introduction to Redux Toolkit
- Middleware and async operations with Redux Thunk
- Consuming REST APIs using Axios and Fetch
- Handling authentication tokens in React
- **Lab:** Integrate React frontend with a mock backend using JSON Server / MockAPI

Day 3

Module 5 : Spring Boot Backend Development – Part 1

- Introduction to Spring Boot and Spring Framework
- Spring Initializr and Maven project setup
- REST API fundamentals
- Annotations (@RestController, @RequestMapping, @PathVariable, @RequestBody)
- Working with MySQL and JPA (Hibernate)
- **Lab:** Build CRUD APIs for “Employee Management System”

Module 6 – Spring Boot Backend Development – Part 2

- Service layer design and dependency injection
- Repository pattern and pagination
- Exception handling and custom error responses
- Logging and validation (Hibernate Validator)
- Introduction to Postman testing
- **Lab:** Implement pagination and validation for Employee API

Day 4

Module 7 – React + Spring Boot Integration

- CORS and security configuration in Spring Boot
- REST API consumption from React
- Building environment-based configuration (dev/prod)
- Handling API errors and responses in React
- **Lab:** Connect React frontend with Spring Boot backend (Employee Management App – End to End)

Module 8 – Authentication, Authorization & Deployment

- JWT-based authentication in Spring Boot
- Login and signup flow in React
- Secure routes using React Router
- Password encryption (BCrypt)
- Deployment of backend on Tomcat / AWS EC2
- **Lab:** Implement secure login / logout using JWT in React and Spring Boot

Day 5

Module 9 – Testing, Build & DevOps Integration

- Unit and integration testing in Spring Boot (JUnit, Mockito)

- React testing with Jest and React Testing Library

Module 10 – Capstone Project & Wrap-Up

Full-Stack Capstone Project:

Build a Production-Ready “Employee/Task Management System”
using React + Spring Boot + MySQL with authentication and deployment pipeline.