Java Backend Development - Syllabus

Duration: 3 Months

Schedule: Monday to Thursday

Time: 8:00 PM - 9:00 PM IST

Goal: Become job-ready in Java backend development using Spring Boot & Microservices.

Month 1: Core Java + OOPs + JDBC

Week 1-2: Core Java Basics

- Java Setup & IDEs (IntelliJ/Eclipse)

- Data Types, Operators, Control Statements

- Loops, Arrays, String Handling

- Exception Handling

Week 3: Object-Oriented Programming (OOPs)

- Classes, Objects, Constructors

- Inheritance, Polymorphism

- Abstraction, Encapsulation

- Interfaces vs Abstract Classes

Week 4: JDBC + Mini Project

- Introduction to JDBC

- Connecting Java to MySQL/PostgreSQL

- CRUD Operations

- Mini Console-Based CRUD Project

Month 2: Spring Boot + REST API

Week 5-6: Spring Boot Essentials

- Introduction to Spring Framework

- Spring Boot Project Setup (Maven/Gradle)

- Spring Boot Annotations & Autowiring

- Dependency Injection (DI)

- Configuration Properties & Profiles

Week 7: Building REST APIs

- RESTful API Design

- HTTP Methods (GET, POST, PUT, DELETE)

- PathVariable, RequestParam, RequestBody

- ResponseEntity, Exception Handling

Week 8: CRUD API with Database

- Spring Data JPA + Hibernate

- Entity Mapping (@OneToMany, @ManyToOne)

- Repository Pattern

- Swagger/OpenAPI Integration

Month 3: Microservices + Tools + Project

Week 9-10: Microservices Architecture

- Monolith vs Microservices

- REST Communication between services

- Service Discovery (Eureka)

- API Gateway (Spring Cloud Gateway)

- Config Server & Centralized Config

Week 11: Dev Tools & Best Practices

- Logging (SLF4J, Logback)

- Lombok, Validation, DTOs

- Unit Testing with JUnit + Mockito

- Postman & API Testing

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- Git & GitHub Basics

- Docker Introduction (Optional Add-on)

Week 12: Capstone Project

- End-to-end Spring Boot Microservice Project

- Integrating multiple services

- REST API Testing

- Final Review & Q&A

Deliverables

- Hands-on Assignments

- Capstone Project

- Source Code on GitHub

- PDF Notes & Cheat Sheets

- Certificate of Completion