



# **Basic Java to Advanced Spring Boot**

## **Backend Development Course (Online) [FREE]**



**Mentor**

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I don't just write code — I build possibilities.

 Will you?

# Special Thanks



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## 6-Month Course Plan

|                                 |   |
|---------------------------------|---|
| <b>Duration</b>                 | <b>24 Weeks</b>                                   |
| <b>Classes per Week</b>         | <b>3</b>  |
| <b>Class Duration</b>           | <b>1.5 Hours</b>                                  |
| <b>Total Classes</b>            | <b>72 Classes (<math>\approx</math>108 Hours)</b> |
| <b>Problem-Solving Sessions</b> | <b>8 Classes (<math>\approx</math>12 Hours)</b>   |

### **Module 1: Core Java Essentials (Weeks 1–3)**

**Goal:** Quickly cover the essentials needed for advanced programming.

| Week          | Class   | Topic  |
|---------------|---------|--|
| <b>Week 1</b> | Class 1 | Course Introduction, JDK & IDE Setup, Java Structure               |
|               | Class 2 | Data Types, Variables, Operators, Input/Output                     |
|               | Class 3 | Control Flow (if, loop, switch) & Debugging Basics                 |
| <b>Week 2</b> | Class 4 | Methods & Parameter Passing  |
|               | Class 5 | Arrays & String Manipulation                                       |
|               | Class 6 | Object-Oriented Programming (OOP) — Classes, Objects, Constructors |
| <b>Week 3</b> | Class 7 | Inheritance, Polymorphism, Encapsulation                           |
|               | Class 8 | Abstract Classes, Interfaces                                       |
|               | Class 9 | Exception Handling & Custom Exceptions                             |

 **Outcome:** Solid understanding of Java syntax, OOP, and debugging.

### **Problem Solving Class: P-Class 1**

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## Module 2: Advanced Java Programming (Weeks 4–7)

**Goal:** Deepen Java knowledge for backend and enterprise development.

| Week          | Class    | Topic  |
|---------------|----------|--|
| <b>Week 4</b> | Class 10 | Java Collections Framework (List, Set, Map)              |
|               | Class 11 | Generics and Iterators                                   |
|               | Class 12 | Comparator & Comparable                                  |
| <b>Week 5</b> | Class 13 | File Handling (IO/NIO)                                   |
|               | Class 14 | Serialization and Deserialization                        |
|               | Class 15 | Java Enums & Inner Classes                               |
| <b>Week 6</b> | Class 16 | Multithreading & Thread Lifecycle                        |
|               | Class 17 | Synchronization and Executors                            |
|               | Class 18 | Java Concurrency Utilities                               |
| <b>Week 7</b> | Class 19 | Lambda Expressions & Functional Interfaces               |
|               | Class 20 | Streams API (Filter, Map, Collectors)                    |
|               | Class 21 | Java 8+ Features (Optional, Time API, Method References) |

 **Outcome:** Able to write efficient, concurrent, and modern Java code.

## Problem Solving Class: P-Class 2

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## Module 3: Database Connectivity & JDBC (Weeks 8–9)

**Goal:** Connect Java apps to databases.

| Week          | Class    | Topic  |
|---------------|----------|--|
| <b>Week 8</b> | Class 22 | Intro to Databases, MySQL Setup, JDBC Overview |

|               |          |                                      |
|---------------|----------|--------------------------------------|
|               | Class 23 | CRUD Operations using JDBC           |
|               | Class 24 | Prepared Statement & Result Set      |
| <b>Week 9</b> | Class 25 | DAO Design Pattern                   |
|               | Class 26 | Connection Pooling                   |
|               | Class 27 | Mini Project: Console-based CRUD App |

➡ **Outcome:** Hands-on JDBC CRUD App linked to a real database.

### ❓ **Problem Solving Class: P-Class 3**

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## 🛠️ Module 4: Spring & Spring Boot Foundations (Weeks 10–12)

**Goal:** Learn the foundation of the Spring ecosystem.

| Week           | Class    | Topic   |
|----------------|----------|---|
| <b>Week 10</b> | Class 28 | Introduction to Spring Framework & IoC        |
|                | Class 29 | Dependency Injection (XML & Annotation-based) |
|                | Class 30 | Spring Bean Lifecycle                         |
| <b>Week 11</b> | Class 31 | Intro to Spring Boot                          |
|                | Class 32 | Spring Boot Auto-Configuration                |
|                | Class 33 | Project Structure, Maven/Gradle Setup         |
| <b>Week 12</b> | Class 34 | Application Properties & Profiles             |
|                | Class 35 | Spring Boot CLI & DevTools                    |
|                | Class 36 | Logging & Configuration Best Practices        |

➡ **Outcome:** Build and run a simple Spring Boot app.

### ❓ **Problem Solving Class: P-Class 4**

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## Module 5: Spring Boot with JPA & REST (Weeks 13–16)

**Goal:** Build fully functional APIs and connect with databases.

| Week    | Class    | Topic                                       |
|---------|----------|---|
| Week 13 | Class 37 | Intro to Spring Data JPA & Hibernate        |
|         | Class 38 | Entities, Repositories, Services            |
|         | Class 39 | CRUD APIs using Spring Boot                 |
| Week 14 | Class 40 | Relationships (OneToMany, ManyToMany)       |
|         | Class 41 | JPQL, Native Queries                        |
|         | Class 42 | Pagination & Sorting                        |
| Week 15 | Class 43 | REST Controllers Deep Dive                  |
|         | Class 44 | Request Mapping, Path Variables, Validation |
|         | Class 45 | Exception Handling in REST APIs             |
| Week 16 | Class 46 | Consuming APIs (Rest Template/Web Client)   |
|         | Class 47 | Unit Testing with JUnit & Mockito           |
|         | Class 48 | Mini Project: Employee REST API             |

 **Outcome:** End-to-end RESTful service connected to a DB.

 **Problem Solving Class: P-Class 5**

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## Module 6: Spring Security & Authentication (Weeks 17–19)

**Goal:** Secure APIs and apps with modern authentication.

| Week           | Class    | Topic   |
|----------------|----------|---|
| <b>Week 17</b> | Class 49 | Intro to Spring Security                      |
|                | Class 50 | Basic Auth, In-Memory Users                   |
|                | Class 51 | Password Encoding & Custom UserDetailsService |
| <b>Week 18</b> | Class 52 | JWT Authentication & Authorization            |
|                | Class 53 | Role-Based Access Control                     |
|                | Class 54 | Securing REST APIs                            |
| <b>Week 19</b> | Class 55 | Security for Microservices                    |
|                | Class 56 | Refresh Tokens & Logout                       |
|                | Class 57 | Testing & Debugging Security Layers           |

 **Outcome:** Secure applications using JWT and role-based access.

### Problem Solving Class: P-Class 6

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## Module 7: Microservices, Cloud & Deployment (Weeks 20–22)

**Goal:** Learn microservices architecture and cloud deployment.

| Week           | Class    | Topic                                 |
|----------------|----------|---------------------------------------|
| <b>Week 20</b> | Class 58 | Microservices Concepts                |
|                | Class 59 | Building Microservices in Spring Boot |
|                | Class 60 | Inter-Service Communication           |
| <b>Week 21</b> | Class 61 | Eureka Discovery Server               |

|                |          |   |
|----------------|----------|---|
|                | Class 62 | API Gateway (Spring Cloud Gateway)              |
|                | Class 63 | Centralized Configuration (Spring Cloud Config) |
| <b>Week 22</b> | Class 64 | Dockerizing Spring Boot App                     |
|                | Class 65 | Deployment on Heroku / AWS                      |
|                | Class 66 | CI/CD Basics (GitHub Actions)                   |

➡ **Outcome:** Able to deploy and scale Spring Boot microservices.

### ❓ **Problem Solving Class: P-Class 7**

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## ⌚ **Module 8: Capstone Project & Review (Weeks 23–24)**

**Goal:** Build a complete enterprise-level project.

| Week           | Class    | Topic                                    |
|----------------|----------|--|
| <b>Week 23</b> | Class 67 | Capstone Project Planning & Architecture |
|                | Class 68 | API Design, Entities, Repositories       |
|                | Class 69 | Security & Testing Integration           |
| <b>Week 24</b> | Class 70 | Deployment & Documentation               |
|                | Class 71 | Presentation Preparation                 |
|                | Class 72 | Final Demo & Feedback                    |

➡ **Outcome:** Full Spring Boot application with authentication, REST APIs, and deployment.

### ❓ **Problem Solving Class: P-Class 8**

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## Mini Projects Throughout

- **Week 7:** Banking System Simulation using Core Java
  - **Week 9:** JDBC CRUD Console App
  - **Week 16:** Employee Management REST API
  - **Week 24:** Final Full Spring Boot Application
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## Tech Stack

### Languages & Tools:

Java 17+, Maven, Spring Boot, Spring Data JPA, Spring Security, JWT, MySQL, Thymeleaf, Postman, Docker, Git, Heroku/AWS.

## Important Link:

Facebook Page: <https://www.facebook.com/protikthedev>

Telegram Channel: <https://t.me/protikthedev>

YouTube Channel: <https://youtube.com/@protikthedev>