

Backend Developer Roadmap (Java + Spring Boot Focus)

Phase 1: Fundamentals of Java

Goals:

- Master OOP concepts: Class, Inheritance, Polymorphism, Encapsulation
- Collections: List, Map, Set, Queue
- Java 8+ features: Streams, Lambda, Optional
- Exception handling
- Basic file I/O

Resources:

- Java Brains (YouTube)
 - W3Schools Java
 - JetBrains Academy (Java Track)
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Phase 2: Spring Boot Essentials

Goals:

- Create REST APIs with Spring Boot
- Understand Controllers, Services, Repositories
- Connect with H2 & PostgreSQL
- CRUD operations using Spring Data JPA
- Entity relationships (OneToMany, ManyToOne)

Key Topics:

- Spring Boot Starter project
- @RestController, @Service, @Repository
- Lombok (optional for brevity)
- application.properties configuration
- DTOs and Model Mapping

Resources:

- [Amigoscode Spring Boot Course](#)
 - [Spring Boot Docs](#)
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Phase 3: Core Database Skills

Goals:

- Understand relational databases and when to use them
- Master SQL for querying and manipulating data
- Apply database concepts inside Java apps

Topics:

- Relational DBs: PostgreSQL (preferred), MySQL, H2 (for testing)
- SQL basics: SELECT, INSERT, UPDATE, DELETE
- JOINS, GROUP BY, ORDER BY, indexes, views
- Relationships: Primary Key, Foreign Key, OneToMany, ManyToOne
- Spring Data JPA and Hibernate ORM
- Connecting DBs using JDBC or JPA
- Migration tools: Flyway or Liquibase

Resources:

- SQLZoo, LeetCode SQL practice
 - Baeldung JPA tutorials
 - PostgreSQL + pgAdmin official docs
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Phase 4: Authentication & Security

Goals:

- User registration & login
- JWT authentication
- Role-based access control (RBAC)

Key Topics:

- Spring Security Basics
- Password hashing (BCrypt)
- JWT Filters and Authentication Manager
- Secure routes with @PreAuthorize

Resources:

- Amigoscode Spring Security Series
 - Baeldung Spring Security tutorials
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Phase 5: Real-World Projects

Project Ideas:

1. Movie Review App
2. E-commerce Backend API
3. Blogging/CMS Platform
4. Event Booking System

Must-have Features:

- RESTful API
 - Auth (JWT)
 - CRUD (Admin/User roles)
 - Relationships (Users ↔ Posts ↔ Comments)
 - Pagination, filtering, searching
 - API documentation (Swagger/OpenAPI)
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Phase 6: Advanced Topics

Topics:

- File Uploads (e.g. image, PDF)
 - Dockerize Spring Boot App
 - Unit + Integration testing (JUnit, Mockito)
 - Exception handling with @ControllerAdvice
 - CI/CD: GitHub Actions or Jenkins
 - Environment configs (.env, YAML)
 - Deploy to Render, Heroku, or EC2
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Phase 7: Interview Preparation

Practice:

- Data Structures & Algorithms (Leetcode)
- System Design Basics (High Level)
- SQL Queries
- REST API design best practices

Build GitHub Portfolio:

- 2-3 polished projects with README + live demo
- Clean, layered architecture
- Include Swagger docs and deployment instructions



Tools & Tech Stack:

- **Language:** Java 17+
- **Framework:** Spring Boot, Spring Security
- **DB:** PostgreSQL, H2 (test), MySQL (optional)
- **Testing:** JUnit 5, Mockito
- **Dev Tools:** IntelliJ, Postman, Docker, Git
- **Deployment:** Render, Railway, Heroku, AWS EC2



Stick to this roadmap, build solid projects, and you'll be job-ready for backend roles by the time you reach Phase 5–6.

Let me know if you'd like templates or sample code for any phase!