Java RoadMap:

**🛣️ Java Web Development Roadmap (2025)**

**✅ 1. Core Java (Java SE)**

Learn the foundations — OOP, exception handling, collections, etc.

* Variables, Data types, Loops, Methods
* Object-Oriented Programming (OOP)
* Collections (List, Map, Set)
* File I/O
* Multithreading (basics)
* Java 8+ features (Lambdas, Streams, Optional)

🔧 **Mini Projects**:

* Student Management System
* File Compressor/Decompressor

**✅ 2. JDBC (Java Database Connectivity)**

Learn how Java connects to a database like MySQL or PostgreSQL

* Connect to a MySQL database
* Execute queries (CRUD operations)
* PreparedStatements
* Connection Pooling

🔧 **Mini Project**: Library Management System (with MySQL)

**✅ 3. Servlets and JSP (Java EE Basics)**

Build dynamic web pages with Java Server Pages and Servlets

* HTTP request/response
* Sessions and Cookies
* MVC architecture (Servlets = Controller, JSP = View)
* JSTL and EL (Expression Language)

🔧 **Projects**:

* Login/Signup System
* Online Quiz Web App

**✅ 4. HTML, CSS, JavaScript (Frontend Basics)**

Java handles the backend, but frontend knowledge is essential

* HTML Forms & Tables
* CSS styling & layout
* Basic JavaScript (DOM, Validation)
* Bootstrap (for UI design)

🔧 **Practice**:

* Design simple pages and forms (Login, Registration)
* Validate form fields with JS

**✅ 5. Spring & Spring Boot (Modern Java Web Dev)**

Framework used in 90% of Java backend jobs

**🔹 Learn Spring Boot:**

* Spring Boot Starter Project (via Spring Initializr)
* REST API development with @RestController
* Dependency Injection (IoC)
* Spring Data JPA + Hibernate
* Validation, Exception Handling
* Spring Boot + Thymeleaf or React (Optional for full stack)
* Spring Security (basic auth + JWT)

🔧 **Projects**:

* Employee Management System (CRUD)
* E-commerce Backend API (Products, Orders, Cart)
* Blog System (Post, Comment, Users)

**✅ 6. Databases & JPA**

* MySQL/PostgreSQL
* Hibernate ORM
* Relationships (OneToMany, ManyToOne)
* Spring Data JPA

🔧 Try:

* Build an API to manage students, courses, and results.

**✅ 7. REST APIs with Spring Boot**

Most modern Java jobs involve building RESTful services

* GET, POST, PUT, DELETE endpoints
* JSON input/output with Jackson
* Postman API testing

🔧 Project:

* Online Course Platform (CRUD API for Courses, Users, Reviews)

**✅ 8. Security and Authentication**

Every production app needs security

* User registration & login
* Password hashing (BCrypt)
* Role-based access
* JWT (JSON Web Token) authentication

🔧 Project:

* Secure Admin Dashboard with Login/Auth

**✅ 9. Build Tools & Deployment**

* Maven / Gradle (Dependency Management)
* Git + GitHub (Version control)
* Deploy on Render, Railway, or Heroku (for free hosting)
* Use MySQL on cloud (like ClearDB or PlanetScale)

**✅ 10. Optional: Full-Stack Java**

* Spring Boot + Thymeleaf (for server-side HTML)
* Spring Boot + React/Angular (for client-server split)
* Use REST API backend with frontend framework

**🎯 Final Projects to Add in Your Portfolio**

* 🛒 **E-Commerce Backend System**
* 🏫 **School Management System**
* 📰 **Blog Platform with Auth**
* 📊 **Employee Payroll System**
* 🔐 **Secure REST API with JWT + Spring Security**

**📘 Bonus Resources**

* YouTube: *Java Brains*, *Amigoscode*, *CodeWithHarry (Hindi)*
* Courses: Spring Boot on Udemy, [Baeldung.com](https://www.baeldung.com/)

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1st>Spring Initializr

🡪**Spring Initializr** is a web-based tool provided by the Spring team that helps you **quickly generate the basic structure of a Spring Boot project**.