Java Learning Roadmap (2025 Edition)

Step 1: Core Java (Beginner Level)

Goal: Understand the syntax, basic programming concepts, and OOP

- Java Installation (JDK, IDE - IntelliJ, Eclipse, or VS Code)
- Hello World & Syntax
- Data Types, Variables, and Operators
- Control Statements: if, switch, loops (for, while, do-while)
- Arrays and Strings
- Methods/Functions
- Object-Oriented Programming:
  - Classes & Objects
  - Inheritance
  - Polymorphism (method overloading & overriding)
  - Encapsulation & Abstraction
- Exception Handling
- Basic I/O (Scanner, BufferedReader)
- Packages and Access Modifiers

Step 2: Intermediate Java

Goal: Understand deeper Java concepts and build small projects

- Java Collections Framework: List, Set, Map, Queue
- Generics, Enums
- Wrapper Classes & Autoboxing
- Java 8 Features (Lambdas, Stream API, Functional Interfaces)
- File Handling
- Multithreading and Concurrency
- Inner Classes
- JDBC (Database connectivity with MySQL/PostgreSQL)

Step 3: Advanced Java

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Goal: For building scalable and robust applications

- Servlets and JSP
- JavaBeans
- HTTP & Session Handling
- MVC Architecture
- Build Tools (Maven/Gradle)
- Logging (Log4j, SLF4J)
- Annotations
- JavaFX or Swing for GUI (Optional)

Step 4: Frameworks & Tools

Goal: Become job-ready for enterprise Java development

- Spring Framework (Core, MVC, Boot, Data JPA, Security)
- Hibernate (ORM)
- REST API Development
- Unit Testing (JUnit, Mockito)
- Swagger/OpenAPI
- Docker & CI/CD Basics

Step 5: Build Projects

Apply your skills to solidify knowledge

Project Ideas:

- Student Management System
- Online Library App
- Todo App with Spring Boot
- RESTful API for E-commerce Backend
- Chat App using Java Sockets

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Step 6: Interview & Competitive Prep

For product-based companies:

- Data Structures & Algorithms in Java
- Practice: LeetCode, HackerRank, Codeforces
- System Design Basics (for big tech roles)

Tools to Learn Alongside

- IDE: IntelliJ IDEA, Eclipse
- Version Control: Git + GitHub
- Build Tools: Maven or Gradle
- Database: MySQL/PostgreSQL
- Debugging and Testing: JUnit

Final Goal

Become confident in:

- Java SE (Standard Edition)
- Spring Framework for Backend
- Clean Code, OOP, Design Patterns
- Project Building and Deployment