



Java Roadmap for Freshers

2026 Edition — Step-by-Step Checklist

10 Topics

Beginner → Job-Ready

Printable

■ Core Java Fundamentals

START HERE

- Data Types, Variables & Operators**
int, float, char, boolean, arithmetic, logical
- Control Flow**
if-else, switch, for, while, do-while loops
- Methods & Recursion**
Parameters, return types, method overloading
- Arrays & Strings**
1D/2D arrays, String methods, StringBuilder
- Exception Handling**
try-catch-finally, custom exceptions, throws

■ Object-Oriented Programming (OOP)

CORE CONCEPT

- Classes, Objects & Constructors**
Blueprint vs instance, constructor chaining
- Inheritance & Polymorphism**
extends, super, method overriding, upcasting
- Abstraction & Encapsulation**
abstract classes, interfaces, getters/setters
- SOLID Principles**
Single Responsibility, Open/Closed, Liskov...

■ Collections Framework

MUST KNOW

- List: ArrayList & LinkedList**
Dynamic arrays, iteration, sorting
- Set: HashSet, TreeSet**
Uniqueness, ordering, operations
- Map: HashMap, TreeMap**
Key-value pairs, putIfAbsent, entrySet
- Queue, Stack & Deque**
FIFO, LIFO, PriorityQueue
- Streams & Lambda (Java 8+)**
filter(), map(), collect(), forEach()

■ SQL & Databases

ESSENTIAL

- SQL Basics**
SELECT, INSERT, UPDATE, DELETE, WHERE, JOIN
- Normalization & Indexes**
1NF-3NF, PRIMARY KEY, FOREIGN KEY, INDEX
- JDBC / JPA Basics**
Connect Java to MySQL/PostgreSQL
- Intro to Hibernate (ORM)**
Entity mapping, SessionFactory, HQL

■ Spring Boot

INDUSTRY STD

- Spring Core & IoC / DI**
Beans, ApplicationContext, @Autowired
- Spring MVC & REST Controllers**
@RestController, @GetMapping, @PostMapping
- Spring Data JPA**
JpaRepository, CRUD ops, custom queries
- Spring Security Basics**
JWT, Basic Auth, role-based access
- application.properties & Profiles**
Database config, env-specific settings

Continue Your Journey → Tools, Cloud & Projects

Master these to stand out in 2026 placements and interviews

■ REST API Design

BACKEND KEY

- HTTP Methods & Status Codes**
GET, POST, PUT, DELETE, PATCH — 200/201/400/404/500
- Request/Response & JSON**
RequestBody, ResponseEntity, DTO pattern
- Postman Testing**
Collections, environments, automated test scripts
- Pagination & Filtering**
Pageable, @RequestParam, sorting
- API Versioning & Swagger**
/api/v1, springdoc-openapi, Swagger UI

■ Docker & Containerization

DEVOPS BASICS

- Docker Concepts**
Images, containers, Dockerfile, layers
- Core Commands**
docker build, run, ps, stop, exec, logs
- Docker Compose**
Multi-container apps, docker-compose.yml
- Containerize a Spring Boot App**
FROM openjdk, COPY jar, EXPOSE, ENTRYPOINT

■ Portfolio Projects

GET HIRED!

- CRUD REST API (Spring Boot + MySQL)**
Students/Products app — Postman tested
- JWT Auth System**
Register/Login, role-based endpoints
- E-Commerce Backend**
Products, orders, payments — Spring + JPA
- Dockerised Microservice**
Two services communicating via REST
- Upload to GitHub + Write README**
Screenshots, setup guide, live demo link

■ Git & Version Control

DAILY USE

- Init, Clone, Stage & Commit**
git init/clone, add, commit -m
- Branching & Merging**
git branch, checkout, merge, rebase
- GitHub / GitLab Workflow**
Fork, Pull Request, Code Review
- Resolving Merge Conflicts**
Conflict markers, git diff, resolution steps

■ Cloud Basics (AWS / GCP / Azure)

FUTURE PROOF

- Cloud Concepts**
IaaS, PaaS, SaaS, regions, availability zones
- AWS Core Services**
EC2, S3, RDS, IAM, Elastic Beanstalk
- Deploy Spring Boot to Cloud**
Dockerised deploy via EB or App Engine
- CI/CD Intro (GitHub Actions)**
Build → Test → Deploy pipeline

■ Pro Tips for Freshers 2026

- ① Build in public — push every project to GitHub
- ② Practice 2 LeetCode problems/day (Easy → Medium)
- ③ Write a blog or LinkedIn post about what you learn
- ④ Apply to internships from Month 4 onwards