■ Core Java Project Roadmap — From Console to Web App

LEVEL 1 – Core Java (Temporary Database - In-Memory)

Goal: Learn Java syntax, logic, and OOP by building a simple console app.

Project: Student Management System (Console Version)

Features:

1 Add, View, Update, Delete students

2 Store in temporary HashMap (in-memory database)

3 Display in tabular format

Concepts Learned: Classes, Objects, Packages, OOP, Collections, Loops & Input handling.

LEVEL 2 – Core Java (Persistent Data - File Handling)

Goal: Add permanent storage using CSV or text file.

Project: Same Student Management System + File Storage

Features Added:

1 Save student data in a .csv file

2 Load existing students on program start

3 Update file whenever CRUD operations happen

Concepts Learned: File I/O, Exception Handling, Data persistence, Layered Architecture.

LEVEL 3 – Core Java (Database Storage - MySQL + JDBC)

Goal: Connect to MySQL instead of CSV.

Project: Student Management System with Database

Features Added:

1 Connect Java with MySQL using JDBC

2 Store student data in a table (students)

3 Perform CRUD operations with SQL queries

Concepts Learned: JDBC, SQL, DAO Pattern, Database schema design.

LEVEL 4 – Dynamic Web Project (Servlet + JSP + JDBC)

Goal: Convert console app into a web-based application.

Project: Student Management System (Web Version)

Features Added:

1 Add/View/Delete students via HTML forms

2 Show data in browser using JSP

3 Handle requests using Servlets (doGet, doPost)

4 Connect with MySQL database

Concepts Learned: HTTP Request/Response, JSP, MVC, Deployment on Tomcat.

LEVEL 5 – Advanced (Spring Boot Web App)

Goal: Modernize your project using Spring Boot.

Project: Student Management System REST API (Spring Boot)

Features Added:

1 Build RESTful APIs

2 CRUD with MySQL via JPA/Hibernate

3 Add validation and exception handling

4 Test APIs using Postman

Concepts Learned: REST API Design, Spring Boot, JPA, Dependency Injection.

LEVEL 6 – Full Stack Integration (Frontend + REST)

Goal: Build a complete full-stack web app.

Project: Student Dashboard Web App

Concepts Learned: AJAX, Fetch API, Consuming REST APIs, Frontend-to-backend communication.

■ Final Learning Path Summary

Level 1 → Console App (In-Memory) Level 2 → Console App (File Handling) Level 3 → Console App (MySQL + JDBC) Level 4 → Web App (Servlet + JSP + JDBC) Level 5 → REST API (Spring Boot) Level 6 → Full Stack (Frontend + REST)