Java Backend Roadmap

Overview:

The main objective of the Java program is to empower interns with the specialized skills they need to build enterprise-scale applications with Java. Upon graduation from this program, interns will be able to:

1. Master OOP Design Concepts and Design Patterns:

   Gain a solid understanding of object-oriented programming (OOP) principles.

   Explore design patterns such as Singleton and MVC through practical application in real-time projects.

2. Java Fundamentals and Advanced Topics:

   Dive into the fundamentals of Java and explore advanced topics.

   Learn about Java programming and its intricacies.

3. Version Control and Git:

   Familiarize yourself with basic Git commands for version control.

   Publish your applications on GitHub to collaborate and showcase your work.

4. Database Design with MySQL:

   Implement and design SQL databases using MySQL.

   Connect these databases to the backend using JDBC.

5. (Servlet and JSP):

   Explore the world of J2EE, including Servlets and JSP (Java Server Pages).

   Understand the web development era before the advent of the Spring framework.

6. Hibernate ORM:

   Learn about Object-Relational Mapping (ORM).

   Apply your knowledge by using the Hibernate ORM framework.

7. Spring Framework:

   Build an application capable of performing CRUD operations (insert, search, delete, update) using Spring.

   Create a web application using Spring MVC and grasp the communication flow between Model, View, and Controller.

8. Dependency Management and Build Tools:

   Understand the importance of dependencies management.

   Explore tools like Maven for efficient project building.

9. Securing APIs and Web Services:

   Learn how to secure APIs and web services using Spring Security.

10. API Consumption and Documentation:

    Discover how to consume and document APIs and web services using tools like Postman and Swagger.

After completing this comprehensive roadmap, you will achieve the following:

1. Develop web applications using Java/Spring and become a proficient backend engineer.

2. Confidently apply for backend engineering positions and secure job offers.

3. Effectively prepare for interviews, including crafting a compelling CV, practicing with mock interviews, and optimizing your LinkedIn profile

Course 1: Java Fundamentals

Learning Outcomes	
WEEK 0	Preparation week Installation &first Project (Setup your development environment, Git and GitHub)
WEEK 1	• Datatypes and Variables • Conditions • String • Loops • Arrays • Methods
WEEK 2	• OOP
WEEK 3	• Exception Handling • File input and Output
WEEK 4	• Java 8(Collections & Stream)
WEEK 5	• Database Programming (MySQL) • Java Database (JDBC)
WEEK 6	• Project
WEEK 7	• Servlet • JSP

Course 2: Java Backend using Spring framework.

Learning Outcomes	
WEEK 8	• Overview Backend Basic • Backend Basics (Http, APIs, Hosting, Domain) • Html Basics
WEEK 9	• Spring Core
WEEK 10	• Spring Boot
WEEK 11	• Hibernate
WEEK 12	• Spring data JPA • CSS, Bootstrap (Frontend) • Spring Thymeleaf
WEEK 13	• Spring MVC • Project (Build a employers management app)
WEEK 14	• Maven Course • Spring Rest (RESTful APIs) • Validation in REST
WEEK 15	• Spring MVC • Project (Build a employers management app)
WEEK 16	• Spring Security Basics • Project (Adding security level)
WEEK 17	• Final Project • Documenting APIs with Swagger and Postman • Testing APIs (using Junit)