

Java Fullstack Course Curriculum

Month 1: Java Backend Development

Week 1: Introduction to Java

- **Day 1:**
 - **Introduction to Java:**
 - History and Features of Java
 - Overview of Java Development Kit (JDK), Integrated Development Environment (IDE), and Build Tools (Maven/Gradle)
 - Setting Up Java Development Environment
- **Day 2:**
 - **Java Basics:**
 - Java Syntax and Structure
 - Variables, Data Types, Operators
- **Day 3:**
 - **Control Flow:**
 - Conditional Statements (if-else, switch-case)
 - Looping Constructs (for, while, do-while)
- **Day 4:**
 - **Functions and Methods:**
 - Defining and Calling Methods
 - Method Overloading and Overriding
 - Understanding Scope and Lifetime of Variables
- **Day 5:**
 - **Exception Handling:**
 - Try-Catch Blocks
 - Throwing and Catching Exceptions
 - Creating Custom Exceptions

Week 2: Object-Oriented Programming (OOP)

- **Day 1:**
 - **Core OOP Concepts:**
 - Classes and Objects
 - Constructors and Destructors
- **Day 2:**
 - **Encapsulation:**
 - Access Modifiers (private, protected, public)
 - Getters and Setters
- **Day 3:**
 - **Inheritance and Polymorphism:**
 - Extending Classes
 - Method Overriding and Overloading
 - Abstract Classes and Interfaces
- **Day 4:**
 - **Collections Framework:**
 - Introduction to Collections (List, Set, Map)
 - Iterating Through Collections
- **Day 5:**
 - **Streams and Lambda Expressions:**
 - Functional Interfaces
 - Stream API Basics
 - Using Lambda Expressions

Week 3: Introduction to Spring Boot

- **Day 1:**
 - **Overview of Spring Boot:**
 - What is Spring Boot?
 - Setting Up a Spring Boot Project
- **Day 2:**
 - **Dependency Injection:**
 - Understanding Beans and Dependency Injection

- Component Scanning and Autowiring
- **Day 3:**
 - **Building RESTful Web Services:**
 - Creating REST Controllers
 - Request Mapping and Response Handling
- **Day 4:**
 - **CRUD Operations:**
 - Introduction to Spring Data JPA
 - Performing CRUD Operations with JPA
- **Day 5:**
 - **Exception Handling and Validation:**
 - Handling Exceptions Globally
 - Using Validation Annotations

Week 4: Database Management

- **Day 1:**
 - **Introduction to Databases:**
 - Basics of Relational Databases
 - SQL Fundamentals (SELECT, INSERT, UPDATE, DELETE)
- **Day 2:**
 - **Advanced SQL:**
 - Joins, Aggregations, Subqueries
 - Indexing and Transactions
- **Day 3:**
 - **JDBC:**
 - Connecting Java Applications to Databases using JDBC
 - Executing SQL Queries from Java
- **Day 4:**
 - **Spring Data JPA and Hibernate:**
 - Defining Entities and Repositories
 - Understanding Entity Relationships (One-to-One, One-to-Many, Many-to-Many)

- **Day 5:**
 - **Database Migrations with Flyway:**
 - Introduction to Flyway
 - Creating and Applying Migrations

Month 2: Frontend Development

Week 5: HTML and CSS

- **Day 1:**
 - **HTML Basics:**
 - HTML Document Structure
 - Common HTML Tags (headings, paragraphs, links, images)
- **Day 2:**
 - **Forms and Tables:**
 - Creating Forms (input fields, buttons, validations)
 - Building Tables (thead, tbody, tr, td)
- **Day 3:**
 - **CSS Fundamentals:**
 - CSS Selectors, Properties, and Values
 - Box Model, Margins, Padding, Borders
- **Day 4:**
 - **Responsive Design:**
 - Media Queries and Mobile-First Design
 - Flexbox and Grid Layouts
- **Day 5:**
 - **CSS Frameworks:**
 - Introduction to Bootstrap
 - Using Bootstrap Components and Utilities

Week 6: JavaScript Basics

- **Day 1:**
 - **JavaScript Syntax:**
 - Variables, Data Types, Operators

- Control Flow (if-else, switch-case, loops)
- **Day 2:**
 - **Functions and Events:**
 - Function Declarations and Expressions
 - Event Handling and DOM Manipulation
- **Day 3:**
 - **Asynchronous JavaScript:**
 - Callbacks and Promises
 - Introduction to Fetch API
- **Day 4:**
 - **Error Handling:**
 - Try-Catch in JavaScript
 - Handling Errors with Promises
- **Day 5:**
 - **Practice:**
 - Building an Interactive Web Page with JavaScript

Week 7: React.js Basics

- **Day 1:**
 - **Introduction to React.js:**
 - What is React.js?
 - Setting Up a React Project
- **Day 2:**
 - **Components and Props:**
 - Creating Functional and Class Components
 - Passing and Using Props
- **Day 3:**
 - **State Management:**
 - Understanding State and setState
 - Using React Hooks (useState, useEffect)
- **Day 4:**
 - **Routing:**

- Introduction to React Router
- Setting Up Routes and Navigation
- **Day 5:**
 - **Practice:**
 - Building a Simple React Application

Week 8: Connecting Frontend with Backend

- **Day 1:**
 - **API Integration:**
 - Fetching Data from Backend APIs
 - Using Axios for HTTP Requests
- **Day 2:**
 - **Handling Forms and User Input:**
 - Controlled and Uncontrolled Components
 - Form Validation and Submission
- **Day 3:**
 - **Error Handling and Loading States:**
 - Managing Loading States
 - Displaying Errors and Notifications
- **Day 4:**
 - **Authentication and Authorization:**
 - Implementing Login and Logout
 - Protecting Routes and Handling Tokens
- **Day 5:**
 - **Practice:**
 - Building a Fullstack Application with React and Spring Boot

Month 3: Advanced Topics and Project

Week 9: Advanced Spring Boot

- **Day 1:**
 - **Spring Security Basics:**
 - Introduction to Spring Security
 - Setting Up Basic Authentication

- **Day 2:**
 - **JWT Authentication:**
 - Implementing JWT Token-Based Authentication
 - Securing Endpoints with JWT
- **Day 3:**
 - **Spring Boot Actuator:**
 - Monitoring and Managing Spring Boot Applications
 - Customizing Actuator Endpoints
- **Day 4:**
 - **Microservices Architecture:**
 - Introduction to Microservices
 - Building and Communicating Between Microservices
- **Day 5:**
 - **Practice:**
 - Securing and Monitoring a Spring Boot Application

Week 10: Advanced React.js

- **Day 1:**
 - **State Management with Redux:**
 - Introduction to Redux
 - Setting Up Redux Store and Actions
- **Day 2:**
 - **Middleware and Async Actions:**
 - Using Redux Thunk for Async Actions
 - Handling Side Effects in Redux
- **Day 3:**
 - **Testing React Components:**
 - Introduction to Jest and React Testing Library
 - Writing Unit and Integration Tests

- **Day 4:**
 - **Performance Optimization:**
 - Code Splitting and Lazy Loading
 - Memoization and React Performance Tips
- **Day 5:**
 - **Practice:**
 - Building a Complex React Application

Week 11: Deployment and DevOps

- **Day 1:**
 - **Deployment Basics:**
 - Introduction to Deployment Concepts
 - Deploying Spring Boot Applications (Heroku, AWS, Docker)
- **Day 2:**
 - **Continuous Integration and Deployment (CI/CD):**
 - Setting Up CI/CD Pipelines (GitHub Actions, Jenkins)
 - Automating Build and Deployment Processes
- **Day 3:**
 - **Monitoring and Logging:**
 - Introduction to Monitoring Tools (Prometheus, Grafana)
 - Implementing Logging (Logback, ELK Stack)
- **Day 4:**
 - **Practice:**
 - Deploying a Fullstack Application
- **Day 5:**
 - **Review and Final Adjustments:**
 - Addressing Deployment Issues
 - Final Testing and Validation

Week 12: Final Project and Review

- **Day 1-3:**
 - **Final Project:**
 - Work on a Comprehensive Fullstack Application
 - Implement Features from Both Frontend and Backend
- **Day 4:**
 - **Project Presentation:**
 - Present the Final Project
 - Code Review and Feedback
- **Day 5:**
 - **Course Review:**
 - Recap Key Learnings
 - Discuss Next Steps and Career Opportunities

Additional Resources:

- **Books:**
 - *"Effective Java"* by Joshua Bloch
 - *"Spring Boot in Action"* by Craig Walls
 - *"JavaScript: The Good Parts"* by Douglas Crockford
- **Online Courses:**
 - Pluralsight, Udemy, Coursera
- **Documentation:**
 - [Spring Boot Documentation](#)
 - React Documentation

Assignments and Projects:

- **Weekly Assignments:**
 - Reinforce learning through practical exercises.
- **Mid-Course Project:**
 - Integrate frontend and backend components in

a sample project.

- **Final Project:**

- Develop a fullstack application incorporating all course elements.

This curriculum is designed to provide a thorough understanding of both Java backend and frontend technologies, equipping students with the skills needed for fullstack development.