Java Full Stack Development

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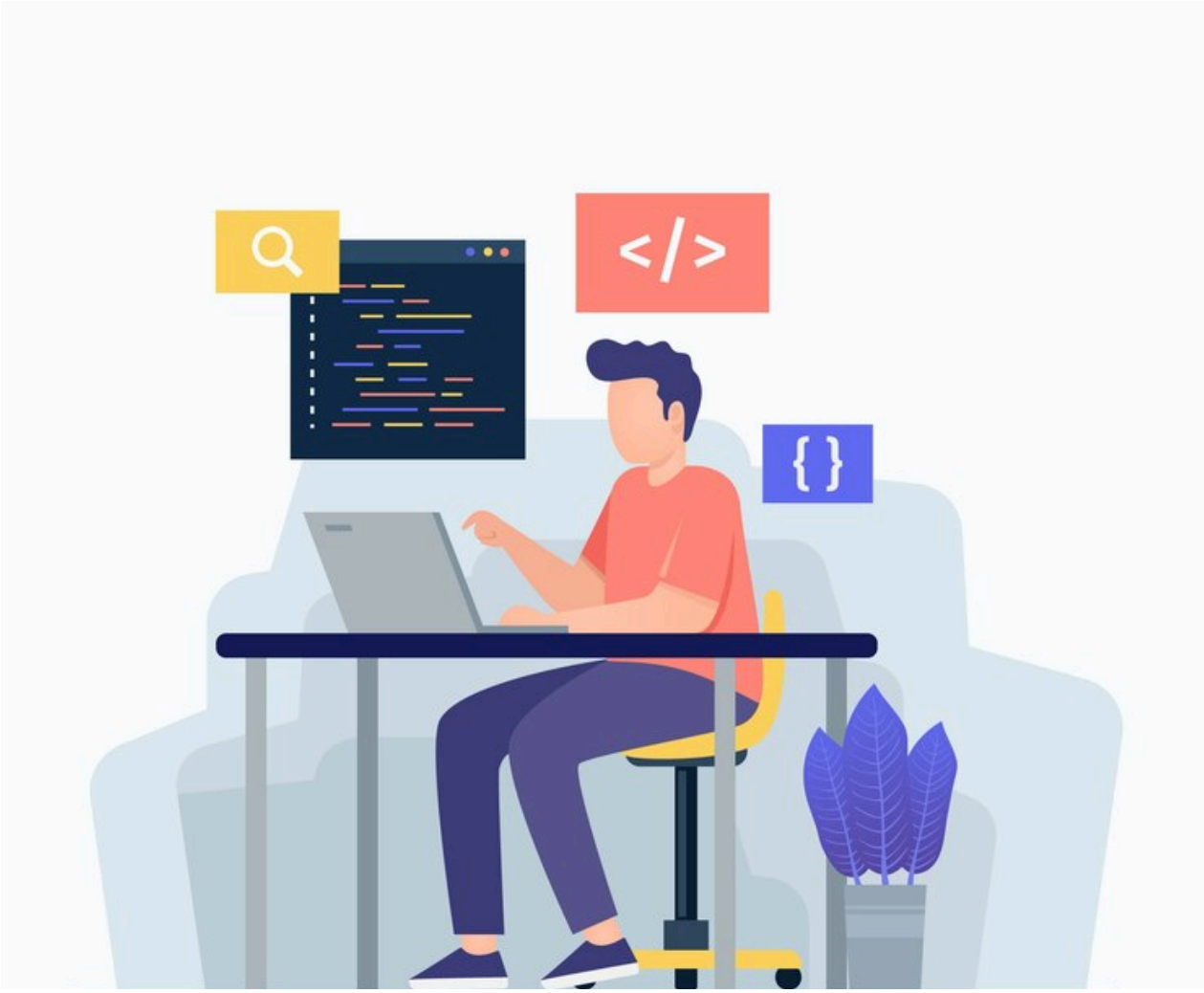
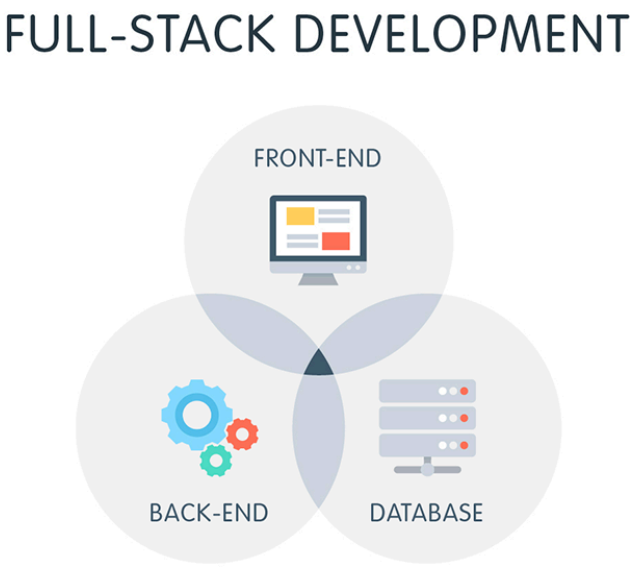


Overview

Full-stack web development is **Specialization** within Software Development.

It specifically focuses on building **Web Applications** that involve both front-end and back-end technologies to create functional and interactive web applications.



"Full stack development is ***the process of designing, developing, building, testing, and deploying a complete web application from start to finish****. It involves working with various technologies and tools, including front-end web development, back-end development, database and other integrations"*

Welcome to Fullstack

Full-stack developer works on all aspects of web development by possessing a wide range of skills, below is a brief overview of technologies, skills and responsibilities of full-stack web developer.

1. Front-End Development:

- **Languages:** HTML, CSS, JavaScript
- **Frameworks/Libraries:** React.js, Angular, Vue.js
- **Responsibilities:** Creating the visible parts of a website or web application that users interact with directly. This includes designing layouts, implementing responsive designs, and ensuring a seamless user experience.

HTML

```
<div class="container">
  <div class="tigre">
    <div class="body">
      <div class="cola"></div>
      <div class="cola3"></div>
      <div class="body7"></div>
      <div class="body5">
        <div class="ray"></div>
      </div>
      <div class="legs"></div>
      <div class="ray3"></div>
      <div class="ray5"></div>
      <div class="legs3"></div>
    </div>
```

CSS

```
body{
  background:black;
}
.container{
  position:relative;
  width:800px;
  height:600px;
  background:#214760;
  margin:0px auto;

}
.tigre{
  position:absolute;
  margin:271px 350px
```

HTML5

CSS3

Javascript

Angular

React

Vue JS

2. Back-End Development:

- **Languages:** Java, Node.js, Python, Ruby, PHP.
- **Frameworks:** Spring (Java), Express.js (Node.js), Django (Python), Ruby on Rails (Ruby) , Laravel (PHP), etc.
- **Databases:** SQL (MySQL, PostgreSQL), NoSQL (MongoDB, CouchDB)
- **Responsibilities:** Handling server-side logic, databases, and ensuring the application's functionality, performance, and security. This involves server management, database integration, and API development.

3. Database Management

- **SQL Databases:** Relational databases like MySQL, PostgreSQL
- **NoSQL Databases:** Document-based (MongoDB), Key-value stores (Redis), etc.
- **Responsibilities:** Storing, managing, and retrieving data efficiently and securely. Understanding different database types and choosing the appropriate one based on project requirements.

Furthermore

4. Version Control / SCM:

- **Tools:** Git, GitHub, GitLab, Bitbucket
- **Responsibilities:** Tracking changes in code, collaborating with teams, and managing different versions of the project.

5. Deployment/DevOps:

- **Platforms:** AWS, Azure, GCP, etc.
- **Tools:** Jenkins, Docker, Kubernetes, etc.
- **Responsibilities:** Deploying and maintaining applications, automating processes, ensuring scalability, and monitoring performance.

6. Additional Skills:

- **Design Principles:** OOPS Concepts, DesignPatterns, High Level Design, SOLID principles, Twelve-Factor App methodology.
- **Testing:** Unit testing, integration testing, end-to-end testing (e.g., Jest, Mocha, Selenium)
- **Security:** Knowledge of web security practices, HTTPS, encryption, Authentication and Authorization and handling vulnerabilities
- **Responsive Design:** Ensuring the website works well across different devices and screen sizes
- **Soft Skills:** Problem-solving, communication, teamwork, and adaptability

Advantages of Full Stack

- Learn **Java** (Back-end), **Angular** (Front end) and Develop E2E Application from scratch.
- Build **REST API, Microservices** using Spring Boot Framework.
- Build **Web UI**, **Single Page Applications** using Angular latest version.
- Full stack helps to understand the overall picture of web applications.
- Get Hands on **real time development** projects
- Enhance your skill set with **trending development frameworks**(Ex: Spring framework, Microservices, SPA, Testing Framework, Build and CI / CD Tools)
- Update Resume with multiple skills
- **High Requirement** of App development and App support.
- **Demand of Fullstack Developers** in current market
- Most Companies are looking out for **multiple tech stack** resources.

What you will learn from this course

★ Java Application Development

★ Building REST API and Microservices using Spring Boot

★ Dynamic Web Page Development using Front End Technologies

★ Development of Angular UI / Single Page Applications

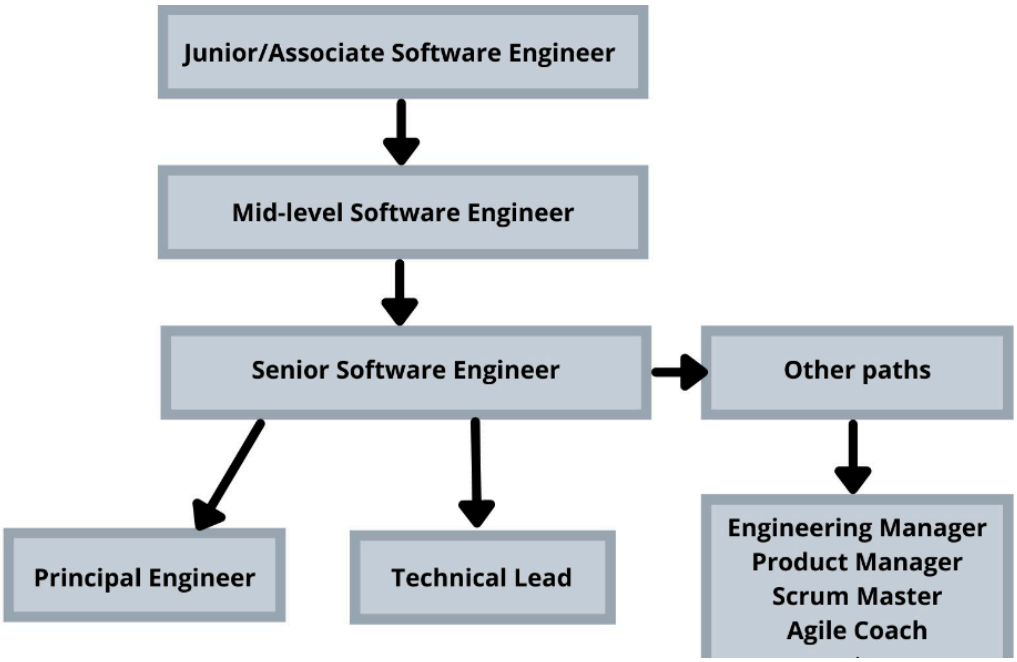
★ Unit Testing / Integration testing / Automation Testing

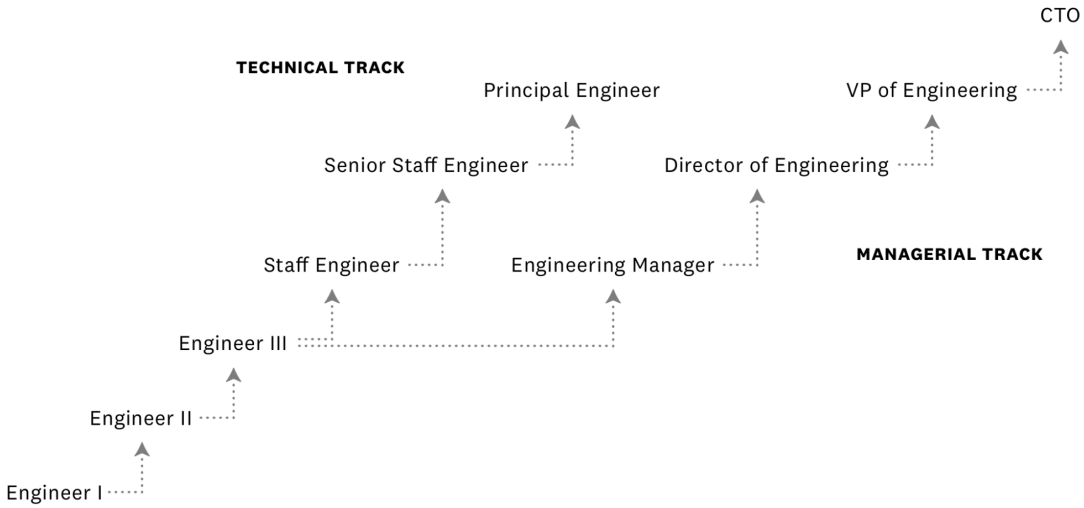
★ Using Tools like Git, Maven, Gradle, Jenkins

★ Realtime Industry Software Development Experience

★ 2 - 3 Hands on Development Projects

Typical Software Engineer Career Path





Java Fullstack Course Syllabus

Core Java

- Introduction
  - Overview of Java and Setup of Java / JDK / IDE
- Java Basics
  - Java Structure, Syntax and Reserved Keywords
  - Variables and Data Types
  - Operators and Expressions
  - Array and String
  - Control Flow Statements
- OOPS Concepts
  - Class / Objects / Fields / Methods
  - Classification, Encapsulation, Abstraction, Inheritance, Polymorphism
  - Access Modifiers, Method Overloading, Overriding, Static Methods
- Exception Handling
  - Control flow of exceptions, Exception Hierarchy
  - Custom Exceptions
- File Handling
  - Read and write files using File API
- Multithreading
  - Multithreading in Java and its advantages
  - Thread Lifecycle, Creating Threads, Synchronization and best practices
- Java Collection Framework
  - List - ArrayList, LinkedList, Vector
  - Map - HashMap, TreeMap, LinkedHashMap
  - Set - HashSet, TreeSet, LinkedHashSet
  - Iterators and Comparators
  - Collections - Stream API

Database - SQL

- SQL Introduction
- Java Application Using JDBC
- JDBC Sessions / Query / Transaction / ResultSet
- CRUD Application using MySQL and JDBC

Backend - Spring Boot API Development

- ➔ Spring Boot Intro
  - ◆ Spring Framework
  - ◆ Spring Boot vs Spring Framework
  - ◆ Build Tools - Maven and Gradle
  - ◆ Spring Boot Starter / Create Spring Boot Application
- ➔ Spring Web
  - ◆ Spring Web Module
  - ◆ Spring Beans and Scope
  - ◆ Web Annotations
  - ◆ Creating First API
  - ◆ Spring Boot Project Structure
- ➔ REST API
  - ◆ JSON Structure
  - ◆ Building REST API
  - ◆ Testing from Postman
- ➔ Spring Data
  - ◆ Spring Data Module
  - ◆ JPA Annotations
  - ◆ CRUD API
  - ◆ Embedded H2 Database
- ➔ Testing
  - ◆ Unit Testing
  - ◆ Junit5 & Mockito
  - ◆ Integration Testing
- ➔ Advanced Modules
  - ◆ Logging
  - ◆ Configuration
  - ◆ Spring Security
  - ◆ Spring Actuator
  - ◆ Spring Kafka

Frontend - UI Foundations

HTML

- HTML Introduction
- HTML Elements (Headings / Paragraph / Lists / Tables / Href / Div)
- HTML Attributes (Id / name / class)
- HTML Form Elements (Input / Button / Select)
- Advanced Tags of HTML5
- Static Plain HTML Web Page

CSS

- CSS Intro
- Alignment Properties (Margin / Padding / Position / Height / Width)
- Visual Properties (Color / Font / Background / Border)
- Display (block / inline-block / flex)
- Inline / Internal / External Styling
- CSS Selectors
- Advanced Properties (Transform / Transition / Animate)
- Static Plain HTML & CSS Web Page

Javascript

- JS Intro
- JS Syntax
- Datatypes / Objects / Arrays / Array Methods
- JSON Representation of Data
- Conditional and Loop Statements
- JS Functions
- HTML DOM - Window / Document
- Chrome Dev Tools and JS Console
- DOM Manipulation
- Event Handling
- Dynamic Web page (HTML / CSS / JS)

Frontend - UI Advanced

Bootstrap

- BS5 Intro
- Containers and Grid Basic
- Typography and Colors
- Navigation / Tables / Cards / Carousel
- Form Elements - Input / Button / Dropdown
- Modals and Tooltips
- Progress Spinner / Progress Bars
- Bootstrap Web Pages

W3 CSS

- W3 CSS Intro
- Containers and Panels
- Layout and Colors
- Navigation / Tables / Cards / Slideshow
- Google Fonts
- Google Material Icons

Responsive Design

- Responsive CSS Query
- Responsive Bootstrap classes
- Mobile Friendly Web Page
- Flex Layouts

JQUERY

- JQuery Intro
- Syntax and Selectors
- DOM Manipulation using jQuery
- jQuery Event Handling
- jQuery AJAX calls
- Dynamic Web Pages using AJAX

Frontend - Angular Development

- Introduction to Angular
  - Client Side Scripting and Templating
  - Introduction to Single Page Applications
  - Angular Architecture
  - Angular Local Setup
- Components and Templates

- Components and Templates
- Two way Data Binding and Interpolation

➔ Angular Directives and Pipes
- Angular directives for manipulating the DOM
- Use of pipes for data transformation

➔ Angular Routing
- Routing Module for SPA
- Routes, params and child routes
- Route Guards

➔ Angular Forms
- Template Drive Forms
- Form Data Binding
- Data Validation
- Reactive Forms

➔ Services and Dependency Injection
- Services
- Dependency Injection
- Data Sharing
- Http Client for calling API

➔ **Building Complete Working Applications using Angular, JAVA, Spring Boot**