Java Full Stack Development

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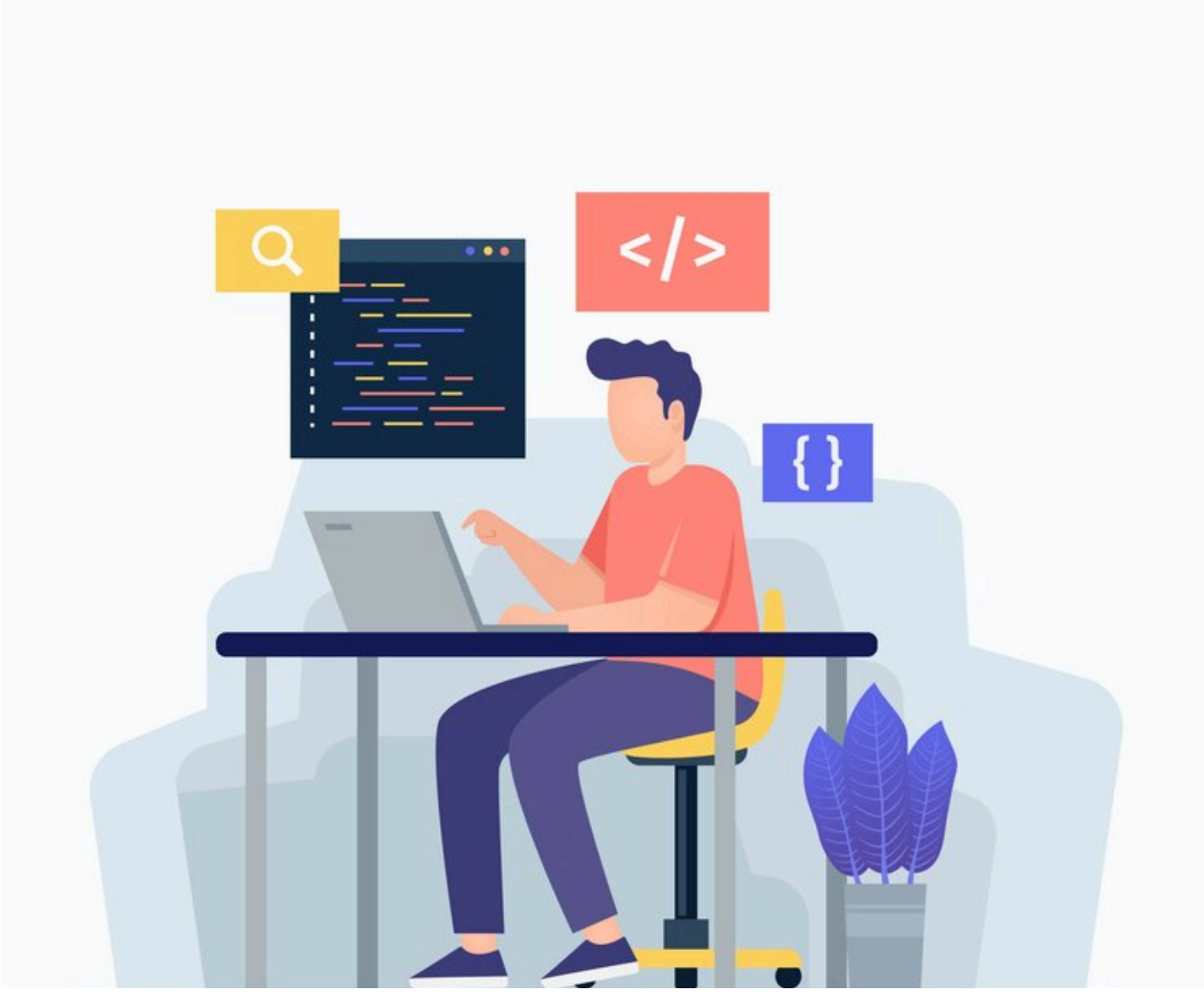
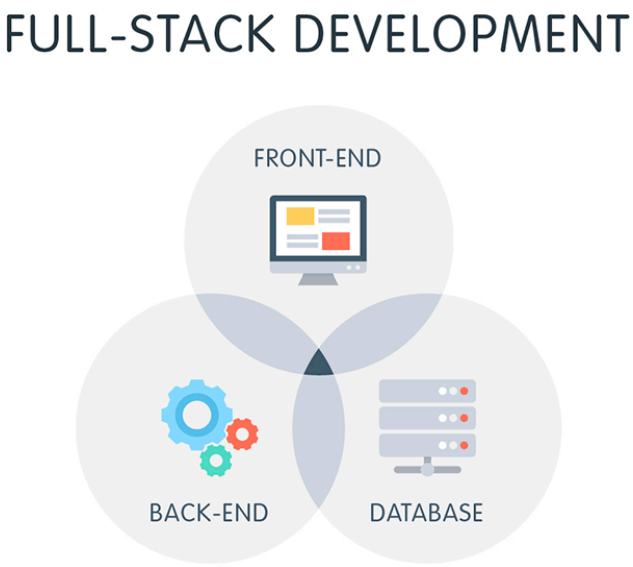


Overview

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"*

Breakdown

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

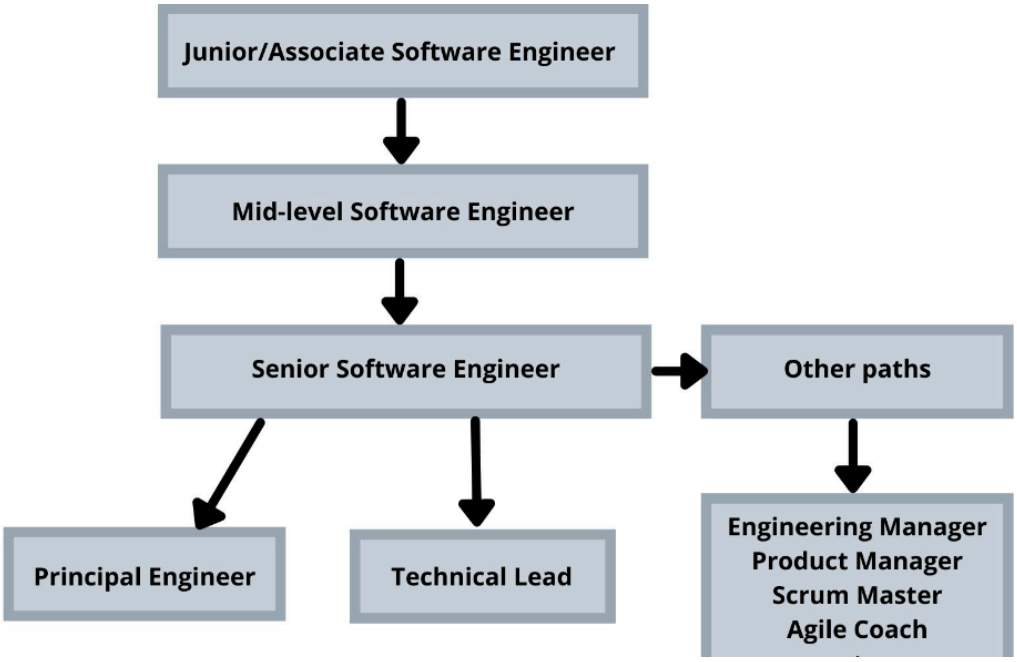
Advantages

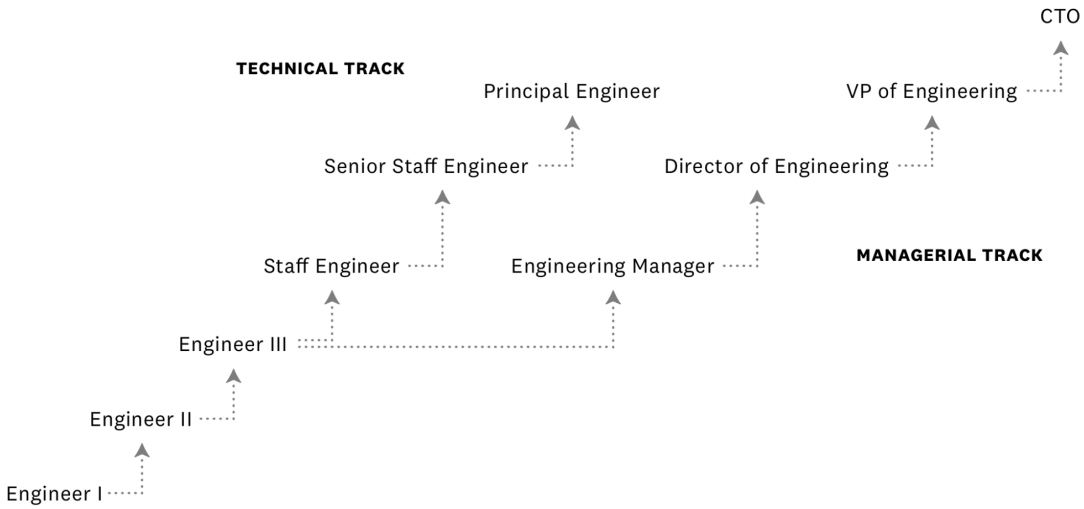
- Learn Java (Back-end), Angular (Front end) and Develop E2E Application from scratch.
- Build **REST API, Microservices** using Spring Boot Framework.
- Build **Web UI**, **Single Page Applications** using Angular latest version.
- Full stack helps to understand the overall picture of web applications.
- Get Hands on **real time development** projects
- Enhance your skill set with trending 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.

Learning Milestone

Java Application Development, Dynamic Web Page Development, Build REST API and Microservices using Spring Boot, Build Angular UI / SPA, Build Automation Testing and Demonstrate End to End working application.

Typical SWE 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
- ➔ 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
  - ◆ Creating First API
  - ◆ Spring Boot Project Structure
- ➔ Spring Data
  - ◆ Spring Data Module
  - ◆ CRUD API
  - ◆ Embedded H2 Database
- ➔ REST API
  - ◆ JSON Structure
  - ◆ Building REST API
  - ◆ Testing from Postman
- ➔ Testing
  - ◆ Unit Testing
  - ◆ Junit5 & Mockito
  - ◆ Integration Testing

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

- ➔ 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

- ➔ **Complete Working Application using Angular, JAVA, Spring Boot**