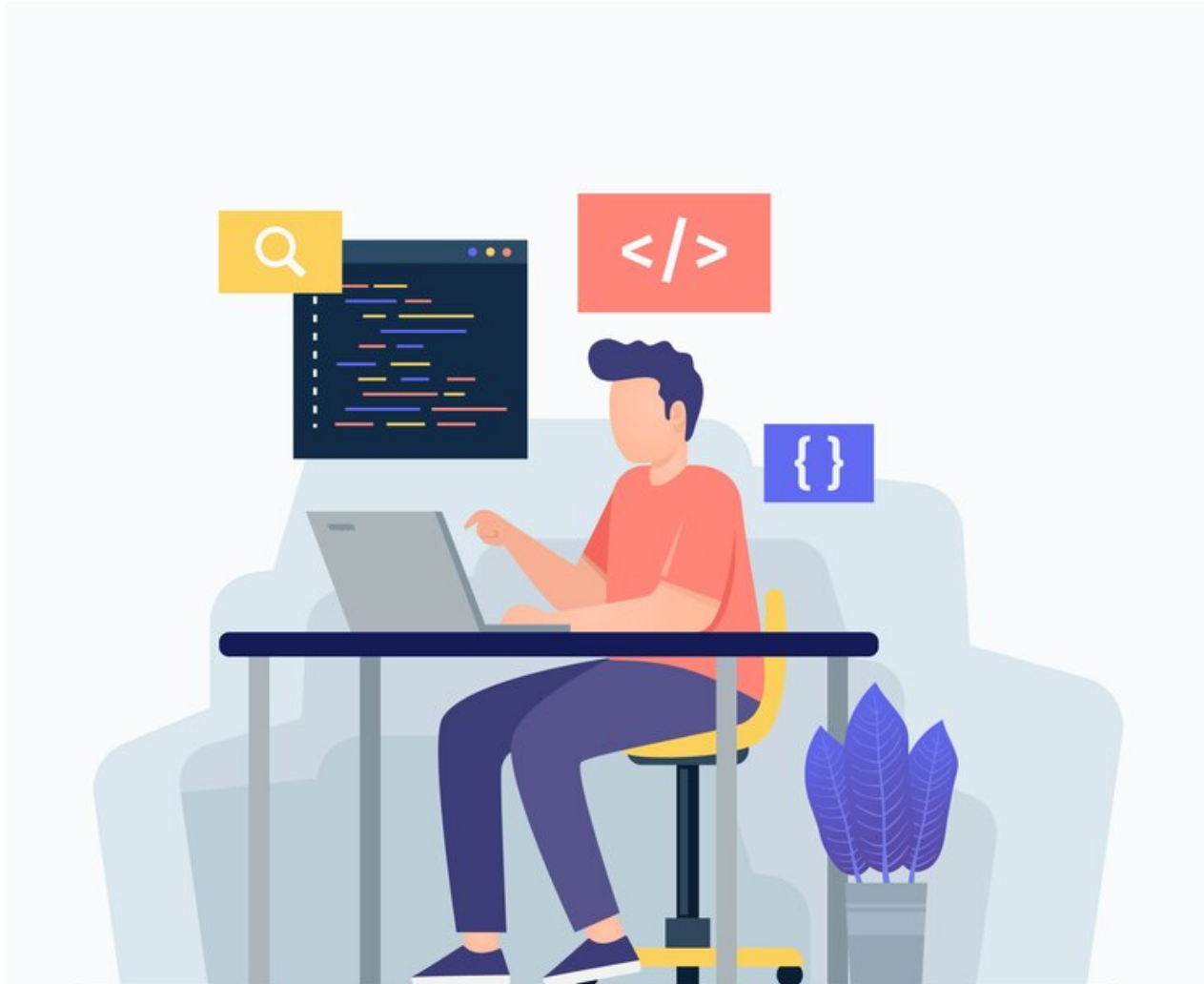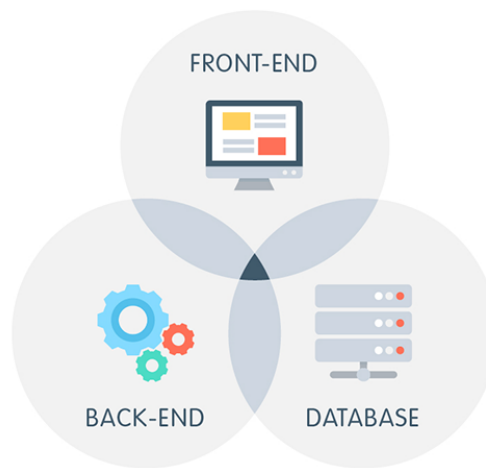# Java Full Stack Development

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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

*"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
☼ HTML                                          ∨
1  <div class="container">
2    <div class="tigre">
3      <div class="body">
4        <div class="cola"></div>
5        <div class="cola3"></div>
6        <div class="body7"></div>
7        <div class="body5">
8          <div class="ray"></div>
9        </div>
10       <div class="legs"></div>
11       <div class="ray3"></div>
12       <div class="ray5"></div>
13       <div class="legs3"></div>
14     </div>
```

```css
☼ CSS                                           ∨
1  body{
2    background:black;
3  }
4  .container{
5    position:relative;
6    width:800px;
7    height:600px;
8    background:#214760;
9    margin:0px auto;
10
11 }
12 .tigre{
13   position:absolute;
14   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.

Java　　　Node JS　　　.NET　　　Spring　　　Spring Boot
　　　　　　　　　　　Framework　　Framework

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.

MongoDb　　Postgre Sql　　Elastic Search　　Oracle　　Mysql　　Microsoft Sql Server　　Redis

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 support by most of Business.
- **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

```
┌─────────────────────────────────────┐
│  Junior/Associate Software Engineer  │
└─────────────────────────────────────┘
                  ↓
┌─────────────────────────────────────┐
│     Mid-level Software Engineer      │
└─────────────────────────────────────┘
                  ↓
┌─────────────────────────────────────┐        ┌──────────────────┐
│      Senior Software Engineer        │  →     │   Other paths    │
└─────────────────────────────────────┘        └──────────────────┘
         ↓                    ↓                          ↓
┌──────────────────┐  ┌──────────────────┐     ┌──────────────────────┐
│ Principal Engineer│  │  Technical Lead  │     │ Engineering Manager  │
└──────────────────┘  └──────────────────┘     │   Product Manager    │
                                               │     Scrum Master     │
                                               │     Agile Coach      │
                                               └──────────────────────┘
```

TECHNICAL TRACK

CTO

Principal Engineer   VP of Engineering ⋯

Senior Staff Engineer ⋯   Director of Engineering ⋯

Staff Engineer ⋯   Engineering Manager ⋯   **MANAGERIAL TRACK**

Engineer III ⋯

Engineer II ⋯

Engineer I ⋯