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	Programme de Formation en Développement Web Full Stack (Angular/Java Spring Boot)	Version : 01 Date : 20/02/2025	

Full Stack Web Development Training Program (Angular & Spring Boot)


Training Objectives

- Master back-end and front-end web development with Spring Boot and Angular.
- Build scalable, secure, and high-performance web applications using modern frameworks and best practices.
- Develop practical skills in API integration, state management, database interactions, and cloud deployment.
- Collaborate effectively in Agile environments with modern development workflows and DevOps tools.
- Prepare for career opportunities in Full Stack development with hands-on experience in cutting-edge technologies.

Program Structure

Module 1: Foundations of Web Development (10 hours)

- 1. Introduction to Web Technologies**
 - Internet vs Web : Key differences
 - Client-server architecture and HTTP/HTTPS protocols
 - RESTful principles vs GraphQL
 - Modern development environments (VS Code, IntelliJ, GitHub)
- 2. Understanding Front-End and Back-End Technologies**
 - Overview of front-end technologies: HTML, CSS, JavaScript
 - Introduction to frameworks and libraries (Angular, React, Vue.js)
 - Overview of back-end technologies: Java, Node.js, Python
 - API development and integration concepts
- 3. Database Essentials**
 - SQL vs NoSQL databases (PostgreSQL, MongoDB)
 - CRUD operations and indexing techniques
 - API development and integration

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Module 2: Back-End Development with Java Spring Boot (80 hours)


1. **Spring Boot Fundamentals (30 hours)**
 - Introduction to Java programming basics
 - Dependency Injection and Inversion of Control (IoC)
 - RESTful API design and security with Spring Security & JWT
2. **Database Integration (30 hours)**
 - ORM with Hibernate and JPA best practices
 - Transaction management and optimization
 - PostgreSQL and MongoDB connectivity
3. **Advanced Spring Boot (20 hours)**
 - Microservices architecture and best practices
 - Event-driven development (RabbitMQ, Kafka)
 - Docker and Kubernetes for container orchestration

Hands-on Activity: Build and secure RESTful services with a microservices approach.

Module 3: Front-End Development with Angular (80 hours)

1. **HTML, CSS & UI Frameworks (20 hours)**
 - Semantic HTML and accessibility best practices
 - Modern CSS (Flexbox, Grid, Tailwind CSS)
 - UI design with Angular Material and Bootstrap
2. **Core Angular Concepts (30 hours)**
 - Project setup and structuring with Angular CLI
 - Components, directives, and services
 - Data binding, event handling, and lifecycle hooks
 - HTTP client and API integration
3. **Advanced Angular (30 hours)**
 - State management with NgRx and RxJS observables
 - Modular architecture, lazy loading, and route guards
 - Form validation (Reactive Forms vs Template-driven)
 - Testing with Jasmine & Karma

Hands-on Activity: Develop a responsive Angular web application with API integration.

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Module 4: Full Stack Integration (30 hours)

1. **Connecting Angular with Spring Boot (15 hours)**
 - REST API consumption and JWT authentication
 - WebSockets for real-time updates
2. **Testing and Debugging (15 hours)**
 - Unit and integration testing with Jest, Mocha, Postman
 - Debugging and performance profiling

Hands-on Activity: Build a full-stack CRUD application with testing.

Module 5 : DevOps & Deployment (20 hours)

1. **Deployment Strategies (10 hours)**
 - Cloud deployment with AWS (EC2, S3, RDS)
 - CI/CD pipelines with Jenkins and GitHub Actions
2. **Monitoring and Optimization (10 hours)**
 - Load balancing and caching (Redis)
 - Observability with Prometheus and Grafana

Hands-on Activity: Deploy and monitor a production-ready application.

Module 6 : Capstone Project (20 hours)

- Develop a fully functional web application combining all covered concepts.
 - Implement authentication, authorization, and data visualization.
 - Deploy the application to a cloud provider (AWS/Azure/Heroku).
 - Present the project with a code review and performance analysis.
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Teaching Methodology

- **Hands-on Training:** Real-world projects with live coding sessions.
- **Agile Approach:** Sprint-based execution with Scrum methodology.
- **Continuous Assessment:** Weekly coding challenges and feedback.
- **Collaboration:** Team projects, mentorship, and peer reviews.

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- **Industry Exposure:** Case studies and expert guest lectures.

Training Duration

- **240 hours**, available in :
 - 20 weeks

Expected Outcomes

- Mastery of Full Stack development with Angular and Spring Boot.
- Ability to build and deploy scalable, secure web applications.
- Experience in cloud deployment and DevOps practices.
- Readiness for enterprise and startup job opportunities.