



Full Stack Development Essentials (24 Weeks)

Phase 1: Comprehensive Training (4 Months / 16 Weeks)

Week 1: Introduction to Web Development with Python

- Overview of Python web frameworks: Flask and Django
 - Setting up the development environment
 - Building a basic web app with Flask or Django
 - Hands-on: Create a simple blog platform
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Week 2: Advanced Python for Web Development

- Django ORM and database integration
 - Templates, forms, and URL routing
 - Hands-on: Add user authentication and CRUD operations to the blog
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Week 3: Spring Boot for Backend Development

- Introduction to Spring Boot and microservices architecture
- Developing RESTful services in Java
- Connecting Spring Boot with databases using JPA/Hibernate
- Project: Build a REST API for a product catalog

Week 4: Advanced Features in Spring Boot

- Security and authentication with Spring Security (JWT, OAuth2)
- Unit and integration testing with JUnit
- Hands-on: Secure and test the product catalog API

Week 5: Developing with Node.js and Express.js

- Introduction to Node.js and Express.js
- Setting up RESTful APIs with Node.js
- Middleware, routing, and error handling
- Hands-on: Create a chat application backend

Week 6: Advanced Node.js Development

- Real-time communication with WebSockets (Socket.io)
- Asynchronous programming with Promises and async/await
- Hands-on: Add real-time features to the chat application

Week 7: Cloud Services Integration with AWS

- Basics of AWS: EC2, S3, Lambda, and RDS
- Hosting web apps on EC2 and managing static files with S3

- Hands-on: Host a web application with a connected database on AWS
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Week 8: Database Management and Optimization

- SQL vs. NoSQL databases: PostgreSQL and MongoDB
 - Designing schemas and optimizing queries
 - Integrating databases with Flask, Spring Boot, and Node.js
 - Project: Build a database schema and integrate it into a multi-module app
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Week 9: API Development and RESTful Services

- Advanced API concepts: HATEOAS, caching, and versioning
 - Authentication and authorization (JWT, OAuth)
 - Hands-on: Implement a secure API for a user management system
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Week 10: Frontend Development Basics (HTML, CSS, JavaScript)

- Responsive design with CSS frameworks (Bootstrap, Tailwind)
 - JavaScript fundamentals and ES6+ features
 - Hands-on: Build a responsive portfolio webpage
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Week 11: Introduction to Frontend Frameworks (React or Angular)

- Setting up React or Angular projects
 - Components, state management, and routing
 - Hands-on: Build a dynamic to-do app
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Week 12: Advanced Frontend Development

- API integration with React/Angular (fetch/axios)
 - Form handling and validation
 - Hands-on: Create a single-page application (SPA) for a product store
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Week 13: Full Stack Integration

- Integrating Python (Flask/Django), Spring Boot, and Node.js backends
 - Using frontend frameworks to consume APIs
 - Hands-on: Build a system that combines backend microservices with a React/Angular frontend
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Week 14: Microservices Architecture

- Designing and building microservices for scalability
 - Service communication with REST and message queues
 - Hands-on: Create a modular app using Flask, Spring Boot, and Node.js
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Week 15: Testing and Debugging

- Frontend and backend testing strategies
 - Debugging techniques for full stack applications
 - Hands-on: Implement unit and integration tests across the stack
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Week 16: Capstone Project

- Develop a full stack application from scratch:
 - Backend services in Flask/Django, Spring Boot, and Node.js
 - Frontend with React/Angular
 - Cloud deployment on AWS
 - Presentation and code review
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Phase 2: Job Training and Real-World Projects (2 Months / 8 Weeks)

Week 17-18: Job Readiness and Interview Preparation

- Resume building with completed projects and portfolio
 - Mock interviews focused on full stack development skills
 - Debugging and troubleshooting live coding challenges
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Week 19-22: Real-World Client Projects

- Collaborate on real-world projects involving:
 - Backend API development with Python, Spring Boot, and Node.js
 - Frontend development with React/Angular
 - Cloud integration using AWS
 - Weekly mentor feedback and technical review
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Week 23-24: Final Assessment and Placement Support

- Final project presentation and assessment
 - Advanced interview prep (system design, DSA)
 - Job placement support: Networking with hiring partners
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