Backend Engineering Syllabus

Welcome to the Backend Engineering course at Skillhob! This comprehensive program is designed to provide you with a strong foundation in backend development and equip you with the necessary skills to build robust and scalable web applications. Throughout the course, you will learn industry-leading technologies and best practices to become a proficient backend engineer.

Part 1: Introduction to Backend Development

- Introduction to backend architecture
- Setting up development environment
- Working with databases (SQL and NoSQL)
- API design principles

In this part, you will gain an understanding of backend development concepts and architecture. You will learn how to set up your development environment and work with different types of databases, including SQL and NoSQL databases. Additionally, you will explore API design principles for creating efficient and scalable web APIs.

Part 2: Backend Development with Node.js and Express.js

- Introduction to Node.js and npm
- Building RESTful APIs with Express.js
- Authentication and authorization
- Error handling and logging

In this part, you will dive into backend development using Node.js and Express.js. You will learn how to build RESTful APIs using Express.js, handle authentication and authorization for secure access, and implement error handling and logging mechanisms to ensure smooth operation and effective debugging.

Part 3: Database Design and Management

- Relational database management systems (RDBMS)
- Introduction to SQL and data modeling
- NoSQL databases and document-oriented databases
- Database performance optimization

In this part, you will focus on database design and management. You will learn about relational database management systems (RDBMS) and the fundamentals of SQL for data modeling and querying. Additionally, you will explore NoSQL databases, such as document-oriented databases, and understand how to optimize database performance for efficient data retrieval.

Part 4: Building Scalable Backend Systems

- Caching strategies and Redis
- Message queues and asynchronous processing
- Load balancing and horizontal scaling
- Performance monitoring and optimization

In this part, you will explore techniques for building scalable backend systems. You will learn about caching strategies using Redis, implement message queues for asynchronous processing, and understand load balancing and horizontal scaling to handle increased traffic. Additionally, you will gain insights into performance monitoring and optimization for efficient system operation.

Part 5: Testing, Deployment, and DevOps

- Testing methodologies and frameworks
- Continuous Integration and Deployment (CI/CD)
- Containerization with Docker
- Infrastructure as Code (IaC) with tools like Terraform
- Monitoring and logging in production

In this final part, you will delve into testing, deployment, and DevOps practices for backend development. You will learn different testing methodologies and frameworks for ensuring the quality of your backend applications. Additionally, you will explore Continuous Integration and Deployment (CI/CD) pipelines, containerization with Docker, Infrastructure as Code (IaC) using tools like Terraform, and monitoring and logging strategies for production environments.

By the end of this course, you will have acquired the knowledge and skills necessary to develop robust and scalable backend systems for web applications. You will be equipped with the latest tools and industry best practices, setting you apart as a competent and sought-after backend engineer.

We're excited to have you on this learning journey! Each part of the course is carefully designed to provide you with practical skills and hands-on experience in backend engineering. Get ready to build high-performance web applications and take your backend development skills to the next level!

If you have any questions or need further assistance, feel free to reach out to us:

- Email: info@skillhob.com
- Phone: 07359619442

Happy learning!