Development with Golang

Go language basics

- Package
- Functions and the main() function
- Importing and using packages
- Variables
- Struct
- Members
- Anonymous members
- Interfaces
- Defining interfaces
- Implicitness of Interfaces
- panic and recover
- defer
- Concurrency

Module 2

- Getting Started with Go
- Overview of Go Programming Language
- Setting up Go Development Environment
- Basics of Go Syntax and Conventions
- Working with Packages and Modules

Module 1

- Introduction to Microservices
- Understanding Microservices Architecture
- Advantages and Challenges of Microservices
- Comparison with Monolithic Architecture
- Key Principles of Microservices Design

Module 3

- Building RESTful APIs with Go
- Introduction to RESTful APIs
- Creating HTTP Servers in Go
- Handling HTTP Requests and Responses
- Implementing CRUD Operations

Module 4

- Containerization with Docker
- Introduction to Docker and Containerization
- Installing and Configuring Docker

- Creating Docker Images for Go Applications
- Container Orchestration with Docker Compose

Module 5

- Service Discovery and Load Balancing
- Understanding Service Discovery
- Implementing Service Discovery with Consul
- Load Balancing Techniques in Microservices
- Integration of Load Balancers with Go Services

Module 6

- Communication between Microservices
- Inter-service Communication Protocols
- Implementing Synchronous Communication (HTTP, gRPC)
- Implementing Asynchronous Communication (Message Queues)
- Circuit Breaker Pattern for Resilient Communication

Module 7

- Data Management and Persistence
- Overview of Data Storage Options in Microservices
- Working with Relational Databases (SQL)
- Working with NoSQL Databases (MongoDB, Redis)
- Data Access Patterns and Best Practices

Module 8

- Security and Authentication
- Securing Microservices Architecture
- Authentication and Authorization in Go Services
- Implementing JWT (JSON Web Tokens) for Authentication
- Securing Communication with TLS/SSL

Module 9

- Testing and Debugging Microservices
- Importance of Testing in Microservices
- Unit Testing and Integration Testing in Go
- Testing Strategies for Microservices
- Debugging Techniques for Go Applications

Module 10

- Deployment and Monitoring
- Deployment Strategies for Microservices
- Continuous Integration and Continuous Deployment (CI/CD)
- Monitoring Microservices with Prometheus

- Logging and Tracing for Troubleshooting

Module 11

- Scalability and Performance Optimization
- Strategies for Scalability in Microservices
- Performance Optimization Techniques
- Caching Strategies for Microservices
- Load Testing and Benchmarking