

GO-206 GO PROGRAMMING ESSENTIALS WITH CLOUD-NATIVE EXTENSION

Course Length: 5 days of Go Language Essentials + 1 day Go Programming Cloud-native Extension, 6 days altogether

Course Description

Go is a new programming language, developed by Google in the XXI. century. After its first 1.0 release in 2012, Go quickly became popular, especially for cloud native environments. It is used by Google in house (e.g., for implementing YouTube), and by several leading IT companies, including Uber, SoundCloud, Dropbox and Twitch. Docker and Kubernetes were also written in Go. We can safely say that by now Go is the de-facto standard programming language of cloud native applications.

In this course we introduce participants to this extremely efficient language with plenty of examples and exercises. We also give an insight to cloud native programming with Go, naturally with the active participation of course attendees.

Join us to this exciting learning experience! Let's Go!

Structure: 50% theory 50% hands on lab exercises

Prerequisites

No prior Go or cloud native development skills are required. It is essential, however, that the attendees have experience in programming in at least one language, such as C, C++, C#, Java, Javascript, Perl, Python, etc. No object-oriented programming skills are required.

Materials

Participants will be provided with a course material in PDF format, as well as plenty of sample Go files for educational use. The course package also contains several exercises along with their suggested solutions.

Detailed Course Outline

PART I. GO PROGRAMMING ESSENTIALS

Module 1: Introduction to Go

- About Go
- Compiler, tools, and IDEs
- Packages and modules

Module 2: Go Language Basics

- The Go syntax
- Identifiers, variables, assignment
- Type declaration
- Pointers, new()
- Variable lifetime and visibility
- Control structures

Module 3: Basic Data Types

- Operators and precedence
- Numeric and logic types
- Strings, runes, and UTF-8

Module 4: Composite Data Types

- Arrays and Slices
- Maps
- Structs

Module 5: Functions and methods

- Function declaration
- Function literals, closures, variadic functions
- Special in Go: defer, panic, and recover
- Go and OOP – an overview
- Methods and receivers
- Methods with pointer receivers
- Type composition with structure embedding

Module 6: Interfaces

- Interface declaration, usage
- Examples from the standard library
- Type assertion, type switch

Module 7: Concurrency in Go

- Understanding concurrency and parallelism
- Goroutines
- CSP: channels, select
- Mutual exclusions

Module 8: File Handling and Networking

- Basic file I/O
- Using the JSON package
- Introduction to TCP/IP networking

Module 9: Introduction to Cloud Native Programming in Go

- What is cloud native programming?
- The twelve-factor app
- The context package

PART II. CLOUD-NATIVE EXTENSION

Module 10: Cloud Native Patterns with Go

- Scalability patterns
- Concurrency patterns