Introduction to Golang
Concepts of Programming Languages
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Johannes Weigend
QAware GmbH

Gopher

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Why Go?

- Go is the major language behind the Cloud Native Stack

  www.cncf.io/ (https://www.cncf.io/)

- The most important components are written in Go: Docker, Kubernetes, etcd, Prometheus, Grafana, ...

- Go is Open Source and maintained by Google

- Go is a distributed, parallel language designed for systems programming at Google to solve the problems of C++ code.

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Hello World

```go
// Copyright 2018 Johannes Weigend
// Licensed under the Apache License, Version 2.0

package main

import "fmt"

func main() {
    fmt.Printf("Hello %s", "Programming with Go \xE2\x98\xAF\n") // \xE2\x98\xAF -> ☯
    fmt.Printf("Hello %s", "Programming with Go ☯\n")
}
```

Run

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Palindrome

```go
func IsPalindrome(word string) bool {
    for pos := 0; pos < len(word)/2; pos++ {
        if word[pos] != word[len(word)-pos-1] {
            return false
        }
    }
    return true
}
```

```go
func TestPalindrome1(t *testing.T) {
    // Unicode Character do not work with a simple string implementation
    if !IsPalindrome("") == true {
        t.Error("isPalindrome('' should be true. But is false.")
    }
    if !IsPalindrome("o") == true {
        t.Error("isPalindrome('o' should be true. But is false.")
    }
    if !IsPalindrome("oto") == true {
        t.Error("isPalindrome('oto' should be true. But is false.")
    }
    if !IsPalindrome("ottos") == false {
        t.Error("isPalindrome('ottos' should be false. But is true.")
    }
}
```

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Introduction to Golang

Rob Pike @ Google 2009 (60 Min)

www.youtube.com/watch?v=rKnDgT73v8s (https://www.youtube.com/watch?v=rKnDgT73v8s)

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Some Questions

- What makes Go different to other Languages?

- What makes Go similar to other Languages?

- Discuss your personal opinions in a group of students!

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Exercise 1

github.com/jweigend/concepts-of-programming-languages/blob/master/docs/exercises/Exercise1.md

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Excercise 1 - Getting Started with Go

If you are not get finished during the lecture hours, please finish it as homework.

Setup

- Install Go from http://golang.org inside a virtual disk (.vhdx on Windows or .sparseimage on Mac) in a /software/go subdirectory.

- Create a Go workspace on the disk in the /codebase/gopath directory (https://www.youtube.com/watch?v=XCsL89YtqCs)

- Create a shell script (.sh / .cmd) to make your changes to the GOPATH and PATH environment variables persistent.

- Create a Github project with your personal account containing a HelloWorld.go programm

- Use go get https://github.com/\<<YOUR REPO>> to copy the repository into your local GOPATH.

- Test the HelloWorld programm with "go run HelloWorld"

- Run the Makefile (with make) and test the slides with "make slideshow"

- (Optional: Install Visual Studio Code, IntelliJ or any other Editor with Go support) on your virtual disk.

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See also

github.com/jweigend/concepts-of-programming-languages (https://github.com/jweigend/concepts-of-programming-languages)

golang.org/ (https://golang.org/)

golang.org/doc/ (https://golang.org/doc/)   9

Thank you

Johannes Weigend
QAware GmbH

johannes.weigend@qaware.de (mailto:johannes.weigend@qaware.de)

http://www.qaware.de (http://www.qaware.de)

@johannesweigend (http://twitter.com/johannesweigend)