Welcome

Concepts of Programming Languages - TH Rosenheim - WS 2010/2020
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Johannes Weigend
QAware GmbH

There are so many Languages …

Course Requirements

- The course is designed as a master course.

- Solid programming skills in Java/C/C++ are required.

- It is assumed that students have some skills in Scala, Python or Ruby.

- For all code examples, we will use Go (Golang) as language.

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Goal of the Course

- Learn how Go differs from other languages conceptually

- Gain skills to pick the right language for a given problem

- Knowledge about the concepts of existing programming languages

- Learn how to write professional code with Golang

Lessons

Lesson 1 - **Introduction**

Lesson 2 - **Basic Language Overview**

Lesson 3 - **OOP with Go**

Lesson 4 - **Functional Programming**

Lesson 5 - **Fuctional Parsers**

Lesson 6 - **Parallel Programming** - Part I

Lesson 7 - **Parallel Programming** - Part II

Lesson 8 - **Distributed Programming** - Part I

Lesson 9 - **Distributed Programming** - Part II

Lesson 10 - **Microservices**

Lessons

Lesson 11 - **Systems Programming**

Lesson 12 - **Summary**

Structure of this course

- Recap - 15 min

- Lecture - 30 min

- Online Tutorials (Video) - 45 min

- Student Discussions - 30 min

- Introduction to Exercises - 15 min

- Exercises - 45 min (+ Homework)

Material

Learning Campus: PDFs only

learning-campus.fh-rosenheim.de/course/view.php?id=1412 (https://learning-campus.fh-rosenheim.de/course/view.php?id=1412)

Github: PDFs, Sources, Slides (Go Present Tool)

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

Semester Work

15 Minutes presentation + 5-10 pages Asciidoc document (written in English)

- Compare Go **OOP** (Object Oriented Programming) with:

```
Smalltalk
C++
Eiffel
Objective C
Modula
Lua
```

- Compare Go **FP** (Functional Programming) with:

```
Haskell
Clojure
F#
```

Semester Work

- Compare Go **SP** (Systems Programming) with:

```
C
C++
Rust
Ada
D
Swift
```

- Compare Go **Concurrency** with:

```
Erlang
Scala Actors
D
Occam
```

Semester Work
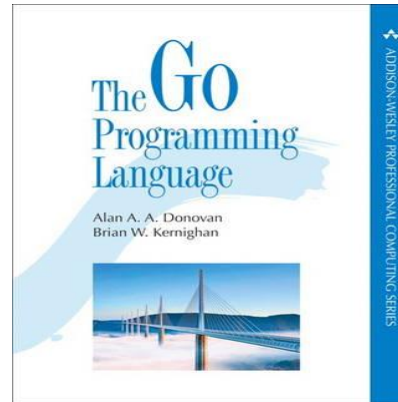
- Compare Go **Distributed Programming** with:

```
JavaScript / NodeJS
C++
Java / Quarkus
Python
```
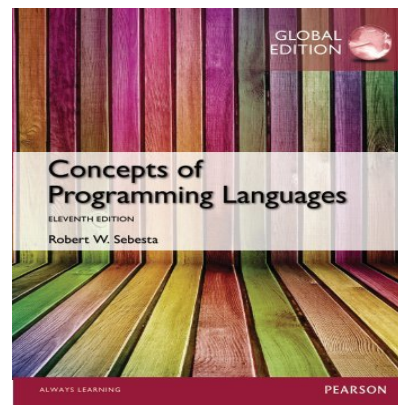
- Compare **Go** with:

```
Typescript
Ruby
Python
Kotlin
Elm
Elixir
Crystal
```

Books

Donovan, Kernigham: The Go Programming Language

Sebesta: Concepts of Programming Languages

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)