Object Meets Function

INF3213b

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Programming Language Research Group
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Summary

Lecturer

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Gerenal Info.

- Name: Object Meets Function
- Code: INF3213
- ECTS: 6
- Semester: Winter Semester 2022/2023
- Time: Wednesday, 18:00 - 20:00
- Room: Hörsaal A301 (Informatik/ Astronomie)
- Language: English
- Repo: https://github.com/steven-lolong/OmF-WS23-24

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introduction

The Praktikum demonstrates how to merge imperative, functional, and object-oriented programming paradigms using Scala as a programming language. It starts with imperative paradigms like mutation and control structures. The next step is learning about functional paradigms, including first-class function, higher-order function, call by value, and call by name. As a last paradigm, there is object-oriented programming, which covers encapsulation, inheritance, and polymorphism. We will discuss options, collections, pattern matching, regular expressions, and function composition in the next topic. Programming can be improved by learning the ideas behind it.

Goal

At the end of this Praktikum, the participant understands and should be able to:

- Build an application using Scala.
- Understand the paradigms of Imperative, Functional, and Object-Oriented programming and be able to use them to build an application.
- Combine the three paradigms in building the application using Scala.

Prerequisite

General programming knowledge is assumed. However, we expect participants to be familiar with Functional Programming and Object-Oriented.

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Participant(s)

- Those who want to learn to program in Scala.
- Programmers who wish to expand their horizons by learning new concepts.
- OO programmer, this Praktikum will expose you to many concepts from functional programming and advanced object-oriented class.

Structure

- The maximum number of absents is three.
- The participant must complete 75% of assignments (ex. six from eight).
- All assignments must be submitted before the deadline. Late submission will deduct 20% from the maximum point per day.
- The participant must complete one project.
- Participants can make a group (max 2 participants per group) for one project.
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Topic

- Programming paradigm
- Let's mutate the state! (Imperative)
- Do it with functions
- Everything is the object
- Option, [implicit,] and collection
- Matching with pattern
- Function composition
- More about function composition

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Grading

- Assignments: 50%
- Project: 50%

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References

- Programming in Scala. Martin Odersky, Lex Spoon, and Bill Venners.
- Functional Programming in Scala. Paul Chiusano and Rúnar Bjarnason.
- Scala for the Impatient. Cay Horstmann.
- Scala 3 online resource. https://docs.scala-lang.org/scala3/book/introduction.html