

# Software Engineering Design & Construction

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Organization

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# Main Topics

- Understanding Software Design and Development
- Software Design Principles
- Software Design Patterns
- Advanced Programming Language Features

# Your Profile

- You should be really interested in programming
- You should have a keen interest in software design
- You have very well developed programming skills in Java
- You are willing to learn a new advanced programming language (Scala)

# Goals of the Lecture

- To be able to produce “good” designs; i.e. to produce code that is – among others – reusable, maintainable, comprehensible.
- To learn to judge the design of existing pieces of software.
- To get familiar with advanced programming language features and to learn when to apply them.
- To get a deeper and thorough understanding of design patterns.
- To understand the relation between software design and programming languages/  
To understand why improvements of programming languages are important/  
To understand programming language concepts w.r.t. supporting high-level design.

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## Final Exam

- We will have a written exam on Tuesday, Feb. 14th 2017
- The exam will take 90 minutes.  
The questions have to be answered in English.
- It will be an open-book exam.

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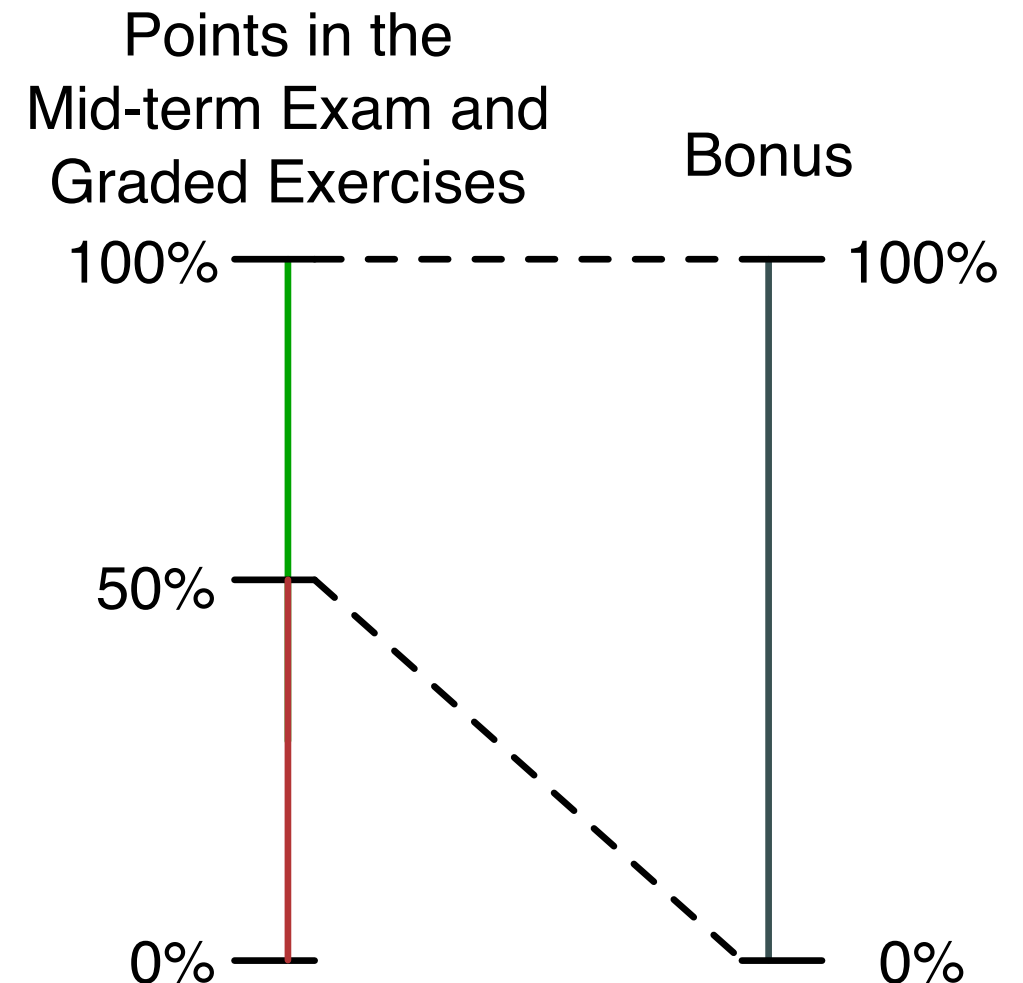
## Exercises

- We will have roughly one exercise per week.
- Only two exercises are graded and will give you some bonus for the final exam:  
Nov. 1st, 2016 (10%) and Jan. 31st 2017 (20%)
- We will discuss the solution to each exercise one or two weeks after presenting it.
- You can discuss the exercise (also the graded ones) with the tutors in their respective office hours.

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## Mid-term Exam (Optional)

- By passing the mid-term exam you will get a bonus for the final exam. The maximum bonus is equivalent to 70% of the number of exam points needed to get a full grade better (e.g., 2,0  $\rightarrow$  1,0); you can get the remaining 30% by doing the graded exercises.
- The bonus cannot be used to pass the final exam.



# Rough Overview

Date	Content	Nr.
20.10.	Organization / Introduction	1
27.10.	Programming Languages	2
3.11.	Design Principles I	3
10.11.	Design Principles II	4
<del>17.11</del>	Cancelled	
24.11.	Inheritance I	5
1.12.	Inheritance II	6
8.12.	Advanced Design Patterns - I	7
15.12	Advanced Design Patterns - II	8
22.12	Advanced Design Patterns - I	9
12.1.	Software Product Lines /	10
19.1	Reactive Programming /	11
26.1	Concurrent Programming /	12
2.2.	...	13
9.2.	Wrap-up / Question and Answers	14