

Design Patterns

- **Teachers**

- Dominik Gruntz, dominik.gruntz@fhnw.ch
- Wolfgang Weck, wolfgang.weck@fhnw.ch

- **Module Instances**

- Tuesday, 08-11, 6.4H07 & 5.1H03
- Tuesday, 12-15, 5.1H03 & 6.4H13

- **Materials**

- \\fsemu18.edu.ds.fhnw.ch\e_18_data11\$\
E1862_Unterrichte_\E1862_3leng\depa

Design Patterns

- **A design pattern is a documentation of a solution for a given design or implementation problem**
- **A design pattern is a problem-solution pair, which can be used in different contexts, together with an advise, on how it has to be used in a new situation**
- **A design pattern is a description of a frequently occurring structure of cooperating components, which solves a general design problem in a particular context**

Learning Objectives (long-term)

- You know the most important object-oriented design patterns
- You apply these design patterns to solve design problems
- You discover the use of design patterns in a given program
- You recognize bad software design and can improve it
- You can justify when/why a given design is bad

JDraw

Hands-on experience helps to understand design patterns:

=> JDraw: A simple graphics editor which you extend

- Theory (lectures), assignments and exams are based on JDraw
=> the assignments are a requirement to pass the examination
=> we consider the assignments as part of the course
- Hand in your solutions by the due date, then you will get a feedback from the teacher

The lectures are comprehensible, but good OOP knowledge is required (should be obvious), otherwise you have no chances.

The JDraw assignments should be solved, as the exam questions are based on JDraw and require a basic understanding of the structure and behavior of the program.

Reference: <http://www.meinprof.ch/uni/kurs/846/bewertungen>

JDraw: Extension Steps

- **Drawing of simple figures**
 - rectangle, circle, line and your own figures
- **Multi window editor**
- **Handles (resizing figures)**
- **Snap to Grid**
- **Group / Ungroup**
- **Cut, Copy und Paste**
- **Extending figure properties**
- **Configuration of the tool palette over a file**
- **Undo / Redo**
- **Open / Save**

Each of these extension steps is used to focus on a particular design pattern

Learning Objectives (short-term)

- You collect your own experiences in the application and implementation of design patterns
- You know different implementation variants of some design patterns
- You gain some insight into the implementation of a (larger) Java program
- **Additionally, you learn**
 - Graphics programming
 - Configuration of components using Spring
 - (Java serialization)
 - ...

Examination

- **Tuesday, 13. November 2018, 10:00 – 11:30, 3.-111**
 - Part 1: 30 Min, without materials (closed book)
 - Part 2: 60 Min, **two** pages A4 notes / summary
- **Final written exam, date/room not yet fixed**
 - Part 1: 30 Min, without materials (closed book)
 - Part 2: 60 Min, **four** pages A4 notes / summary

References (1)

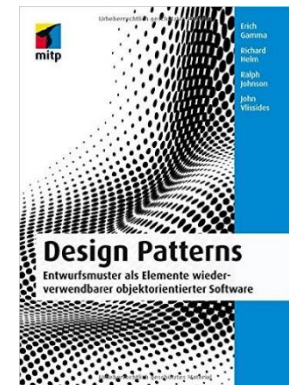
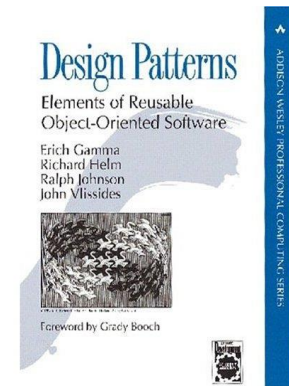
- **Head First Design Patterns**
Erich & Elisabeth Freeman,
Kathy Sierra;
O'Reilly;
ISBN 978-0596007126
- **Entwurfsmuster von Kopf bis Fuß**
Erich & Elisabeth Freeman,
Kathy Sierra;
O'Reilly;
ISBN 978-3955619862



<http://proquestcombo.safaribooksonline.com/0596007124>

References (2)

- **Design Patterns**
Gamma, Helm, Johnson, Vlissides;
Prentice Hall, 1st edition;
ISBN 978-0201633610
- **Design Patterns**
Gamma, Helm, Johnson, Vlissides;
mitp, 2014;
ISBN 978-3826697005

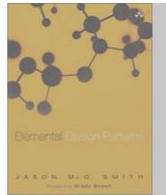


<http://ebookcentral.proquest.com/lib/fhnw/detail.action?docID=1939301>

References (3)



Design Patterns: Elements of Reusable Object-Oriented Software
Book: ~~\$29.99~~ ~~\$59.99~~
eBook: ~~\$23.99~~ ~~\$47.99~~



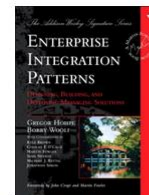
Elemental Design Patterns
Book: ~~\$22.49~~ ~~\$44.99~~
eBook: ~~\$17.99~~ ~~\$35.99~~



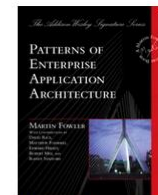
Design Patterns Explained: A New Perspective on Object-Oriented Design, 2nd Edition
Book: ~~\$29.99~~ ~~\$59.99~~
eBook: ~~\$23.99~~ ~~\$47.99~~



Mashup Patterns: Designs and Examples for the Modern Enterprise
Book: ~~\$19.99~~ ~~\$39.99~~
eBook: ~~\$15.99~~ ~~\$34.99~~



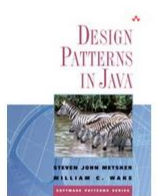
Enterprise Integration Patterns
Book: ~~\$34.99~~ ~~\$69.99~~
eBook: ~~\$27.99~~ ~~\$55.99~~



Patterns of Enterprise Application Architecture
Book: ~~\$34.99~~ ~~\$69.99~~
eBook: ~~\$27.99~~ ~~\$55.99~~



Implementation Patterns
Book: ~~\$24.99~~ ~~\$49.99~~
eBook: ~~\$19.99~~ ~~\$39.99~~



Design Patterns in Java™, 2nd Edition
Book: ~~\$32.49~~ ~~\$64.99~~
eBook: ~~\$25.99~~ ~~\$54.99~~



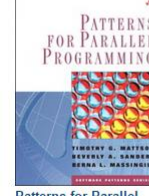
Design Patterns in Java LiveLessons
Video: ~~\$149.99~~ ~~\$299.99~~



Design Patterns in Ruby
Book: ~~\$28.49~~ ~~\$56.99~~
eBook: ~~\$22.99~~ ~~\$45.99~~



Cocoa Design Patterns
Book: ~~\$27.49~~ ~~\$54.99~~
eBook: ~~\$21.99~~ ~~\$43.99~~



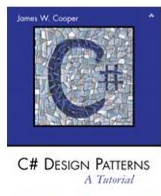
Patterns for Parallel Programming
Book: ~~\$34.99~~ ~~\$69.99~~
eBook: ~~\$25.99~~ ~~\$54.99~~



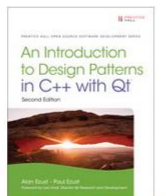
Patterns-Based Engineering: Successfully Delivering Solutions via Patterns
Book: ~~\$27.49~~ ~~\$54.99~~
eBook: ~~\$21.99~~ ~~\$43.99~~



Software Requirement Patterns
Book: ~~\$19.99~~ ~~\$39.99~~
eBook: ~~\$15.99~~ ~~\$34.99~~



C# Design Patterns: A Tutorial
Book: ~~\$34.99~~ ~~\$69.99~~
eBook: ~~\$27.99~~ ~~\$55.99~~



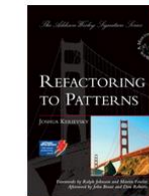
Introduction to Design Patterns in C++ with Qt, 2nd Edition
Book: ~~\$29.99~~ ~~\$59.99~~
eBook: ~~\$23.99~~ ~~\$47.99~~



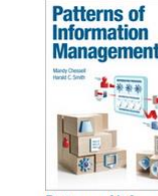
SOA Design Patterns
Book: ~~\$37.99~~ ~~\$74.99~~
eBook: ~~\$29.99~~ ~~\$59.99~~



Service Design Patterns
Book: ~~\$28.99~~ ~~\$57.99~~
eBook: ~~\$21.99~~ ~~\$43.99~~



Refactoring to Patterns
Book: ~~\$33.99~~ ~~\$67.99~~
eBook: ~~\$27.49~~ ~~\$54.99~~



Patterns of Information Management
Book: ~~\$27.49~~ ~~\$54.99~~
eBook: ~~\$21.99~~ ~~\$43.99~~

References (4)

- **Online-Resources**



=> Description on how to access the e-books
can be found on the AD