

In the name of God

# A brief review of topics

Advanced topics in Software Engineering



Leila Samimi-Dehkordi  
PhD. Student  
Department of Software Engineering  
Faculty of Computer Engineering  
University of Isfahan  
Email: *l.samimi@gmail.com*

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- Design Patterns
- Model-Driven Engineering

# Design Pattern Ingredients

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- Introduction to Java Programming
- Object-oriented Programming
- Class Modeling and Modeling Languages
- Introduction to Design Pattern
- Types of Design Patterns (by students)
- Anti-Patterns

# Design Pattern

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- Prerequisites:
  - Java
  - Eclipse
  - UML



- A **design pattern** in architecture and computer science is a formal way of documenting a solution to a design problem in a particular field of expertise.
- The idea was introduced by the architect Christopher Alexander in the field of architecture.

# Model-Driven Engineering

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- Principles of MDD and MDE
- Meta-modeling
- Introduction to OCL
- Domain Specific Languages
- Model Transformations
- MTLs
- Model-to-model & model-to-text transformations

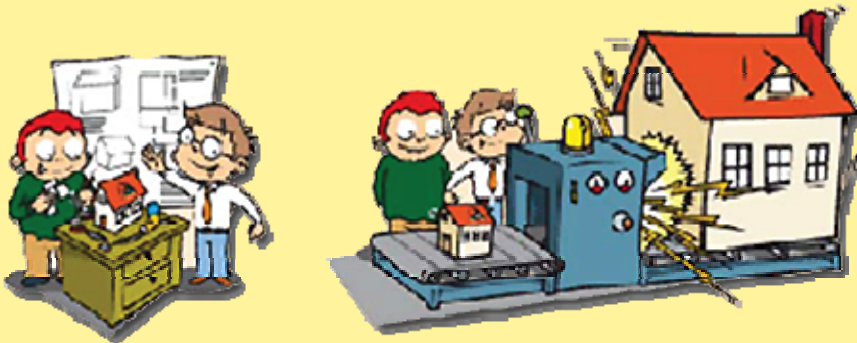
# MDE

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Programming



Modeling → Generating

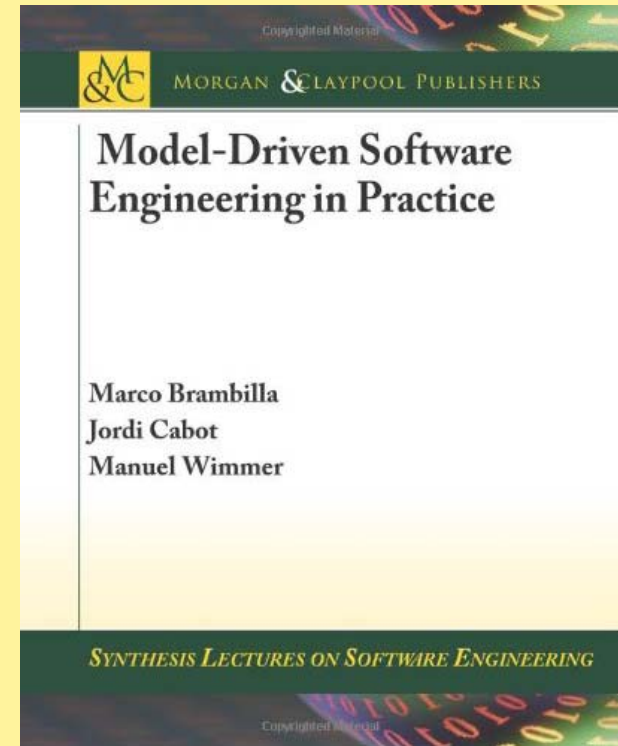


- A major purpose of MDSD is reaching a higher level of abstraction.

# Reference books and texts

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**Model-Driven Software Engineering in Practice**  
by Marco Brambilla, Jordi Cabot, Manuel Wimmer.  
Morgan & Claypool, USA, 2012.



# Reference books and texts

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Model-Driven Development Lecture Notes

by Andrzej Wąsowski (And-jey Vonsovsky)

IT University of Copenhagen, Spring 2013.

<http://www.itu.dk/~wasowski/>



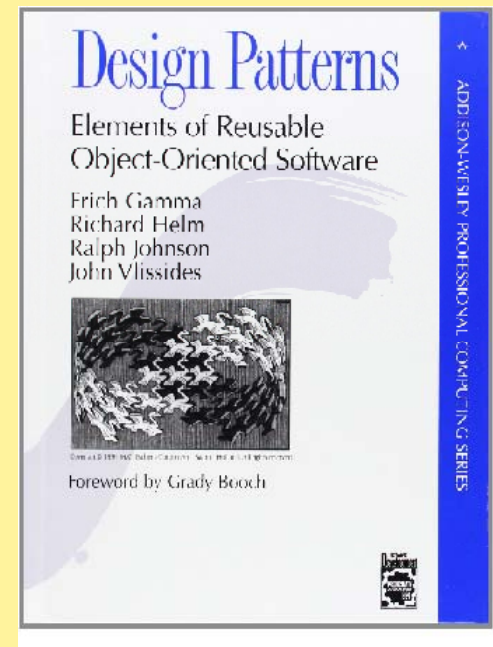


# Reference books and texts

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## Design Patterns Elements of Reusable Object-Oriented Software

by Erich Gamma, Richard Helm, Ralph Johnson, and John Vlissides (**The Gang of Four**), 1994.



# Evaluation

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- An important part of the evaluation is based on a research project. Students should give an oral presentation as well as a project report at the end.
  - Part 1 exam            20%
  - Part 2 exam            20%
  - Assignments            10%
  - Presentation            10%
  - Project                    40%

# Project

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- You would propose the topic of project.
- It is needed to be about the application of MDD.
- Which application? (You propose)

# Contact Info

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- If you have question please contact with topic:  
Iaushk-AdvTopSE
- Email: [l.samimi@gmail.com](mailto:l.samimi@gmail.com)

# Thanks for your attention

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