Software Engineering



Lesson #01 - Practice

Agenda: Lesson #01 - Software Engineering - Practice

- 1 Course overview
- 2 Course organization
- 3 References & Tools
- 4 Q & A

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Course overview



Course goals & objectives

During practice

Subject focuses on the enlargement of students' acquaintance on practices more deeply through class-works and assignments

Course overview

Course Goals & Objectives

UML

Software Design Patterns



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Course Details

Academic Year: 2023 - 2024



Fall 2023

4 months (September 2023 - December 2023)

3 hours in a week (2 h. lecture - 1h. practice)

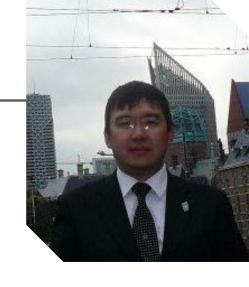
ALDAMURATOV Jomart

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+8 years experience in Education (KBTU & SDU)

~10 years experience in Enterprise IT (Toyota Motor Kazakhstan LLP -Almaty, Kazakhstan - 2008 - 2018)

Master of Computer Science (Ritsumeikan University, Kyoto, JAPAN - 2005-2007)







立命館大学

Instructor's Master Degree Thesis

- University: Ritsumeikan University
- Thesis Name: Negotiating method among alternatives (sub-goals) in Goal-Oriented Requirements Analysis (2007-06-21)
- Professor: prof. Atsushi Ohnishi
- Link: https://www.ieice.org/ken/paper/20070621eAVo/eng/
- Related Topics: Requirements Analysis / Requirements Elicitation / Goal-Oriented Requirements Analysis / Analytic Hierarchy Process /



Lesson 01: Software Engineering

- Course overview
- Course organization
- References & Tools



Lesson 02: UML

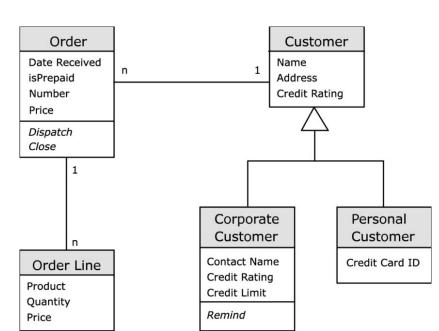
- Play. Experiment. Discover.
- StarUML & StarUML installation
- First UML diagram





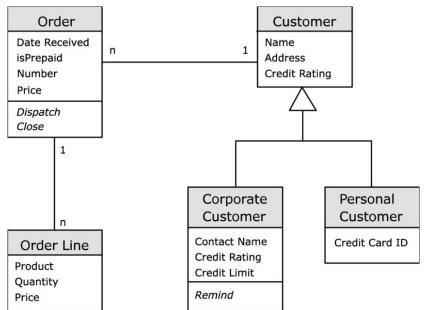
Lesson 03: Class Diagrams & Sequence Diagrams

- What is UML?
- Class Diagrams: Essentials
- Sequence Diagrams
- Class Work



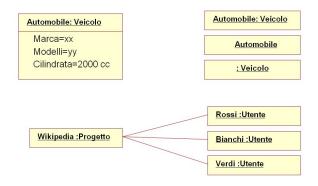
Lesson 04: Class Diagrams

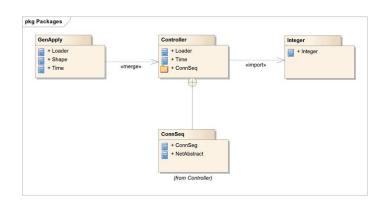
- Class Diagrams: Advanced Concepts
- Class Work



Lesson 05: Object Diagrams & Package Diagrams

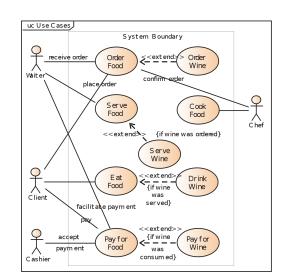
- Object Diagrams
- Package Diagrams
- Class Work

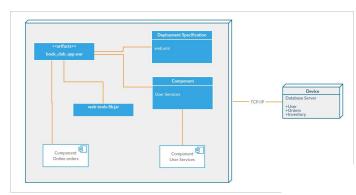




Lesson 06: Deployment Diagrams & Use Cases

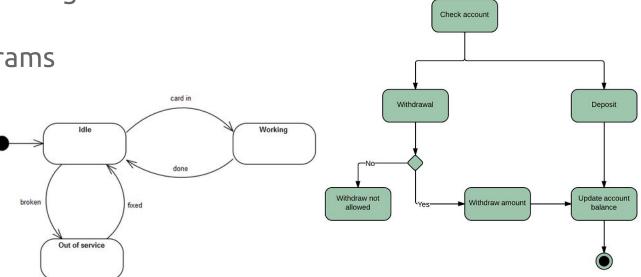
- Deployment Diagrams
- Use Cases
- Class Work





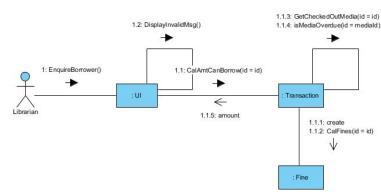
Lesson 07: State Machine Diagrams & Activity Diagrams

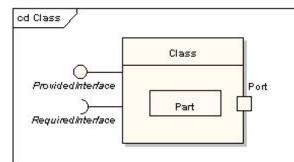
- State Machine Diagrams
- Activity Diagrams
- Class Work



Lesson 08: Communication Diagrams & Composite Structures

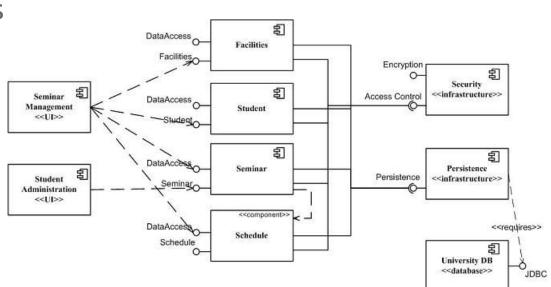
- Communication Diagrams
- Composite Structures
- Class Work





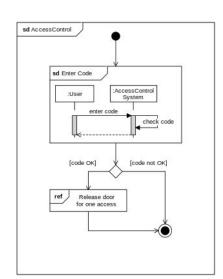
Lesson 09: Component Diagrams & Collaboration

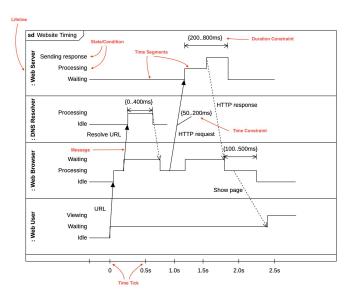
- Component Diagrams
- Collaboration
- Class Work



Lesson 10: Interaction Overview Diagrams & Timing Diagrams

- Interaction Overview Diagrams
- Timing Diagrams
- Class Work





Lesson 11: Design **Patterns**

Introduction

A Case Study:

Class Work

Designing a

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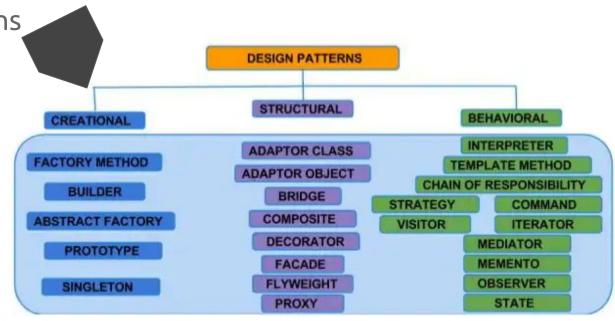
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Lesson 12: Design Pattern Catalog

Creational Patterns

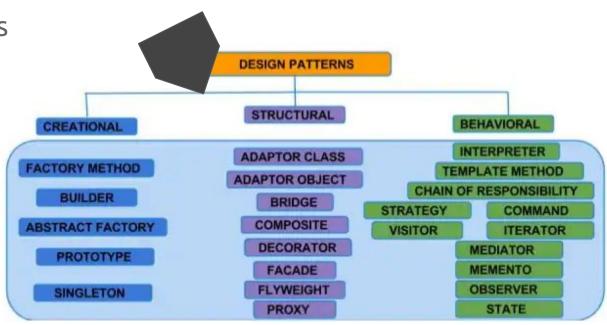
Class Work



Lesson 13: Design Pattern Catalog

Structural Patterns

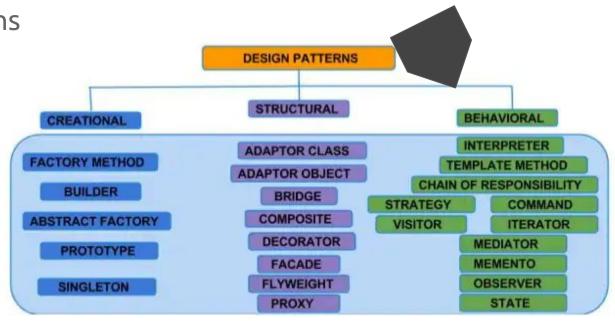
Class Work



Lesson 14: Behavioral Patterns

Behavioral Patterns

Class Work



Lesson 15: Conclusion

- Conclusion
- Review



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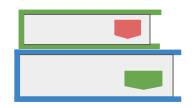
MP-Max. Points for the semester; MP for EC-Max. Points for each class; ES-examination session;

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Practice References:





• StarUML (- http://staruml.io)

References:

UML Distilled: A Brief Guide to the Standard Object Modeling Language, 3rd Edition, Martin Fowler, 2004, Addison-Wesley Professional; Comers through Version 2.0 OMC UML Standard

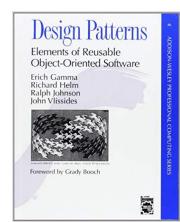
TML DISTILLED
THIRD EDITION

A BRIEF GUIDE TO THE STANDARD
OBJECT MODELING LANGUAGE

MARTIN FOWLER

Forewords by Cris Kohryn, Grady Boech
TWAT Jacobson, and Jim Burnbaugh

Design Patterns: Elements of Reusable Object-Oriented Software, 1st Edition, Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides, 1994, Addison-Wesley Professional;



References:

Several articles related to topics and online materials will be listed on the UNINET/WSP



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Q&A