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 organization

Course Details

Academic Year: 2023 - 2024

Fall 2023

4 months (September 2023 - December 2023)

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

Course organization

ALDAMURATOV Jomart

E-mail: z.aldamuratov@kbtu.kz

+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)

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 /

R

RITSUMEIKAN
UNIVERSITY
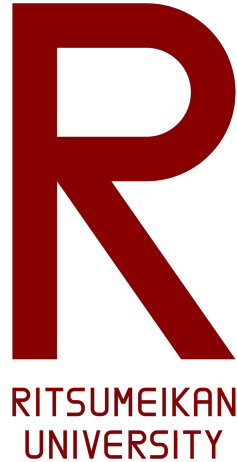
Lesson 01: Software Engineering

- Course overview
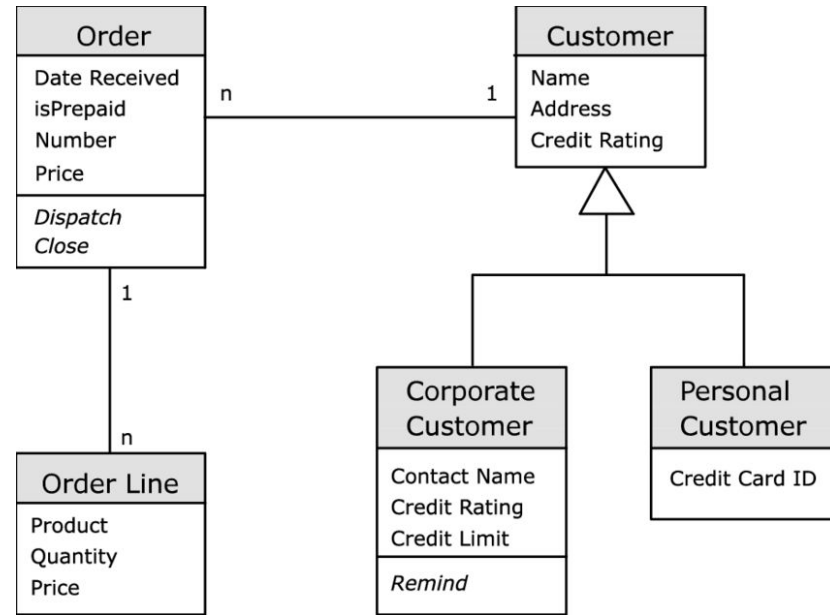
- Course organization

- References & Tools

Lesson 02: UML

- Play. Experiment. Discover.

- StarUML & StarUML installation
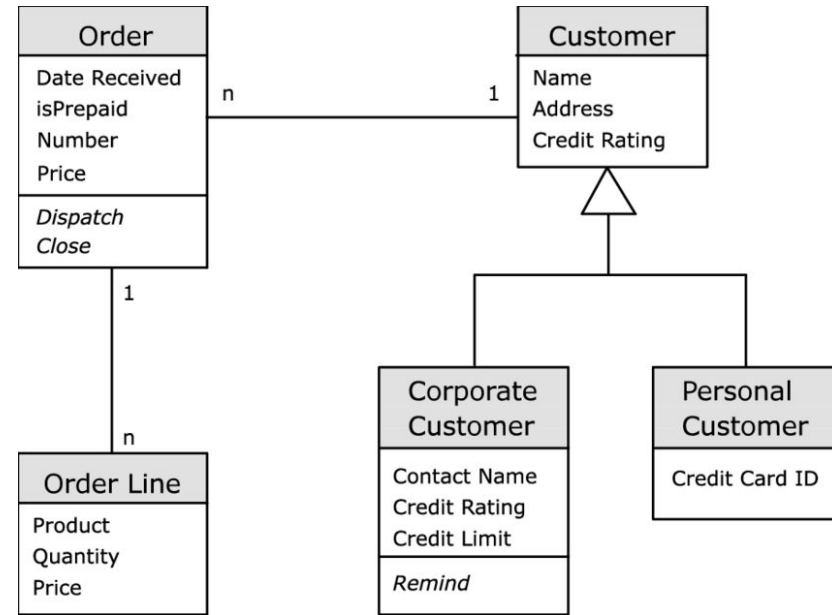
- First UML diagram

Lesson 03: Class Diagrams & Sequence Diagrams

- What is UML?

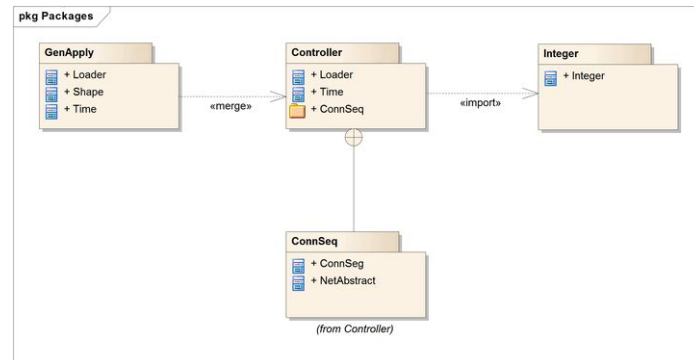- Class Diagrams: Essentials
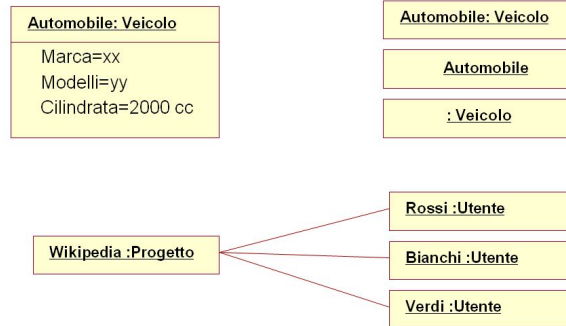
- Sequence Diagrams

- Class Work

Lesson 04: Class Diagrams

- Class Diagrams: Advanced Concepts

- Class Work

Order	
Date Received	
isPrepaid	
Number	
Price	
Dispatch	
Close	

Customer	
Name	
Address	
Credit Rating	

n ————— 1

1

n

Order Line	
Product	
Quantity	
Price	

Corporate Customer	
Contact Name	
Credit Rating	
Credit Limit	
Remind	

Personal Customer	
Credit Card ID	

Lesson 05: Object Diagrams & Package Diagrams
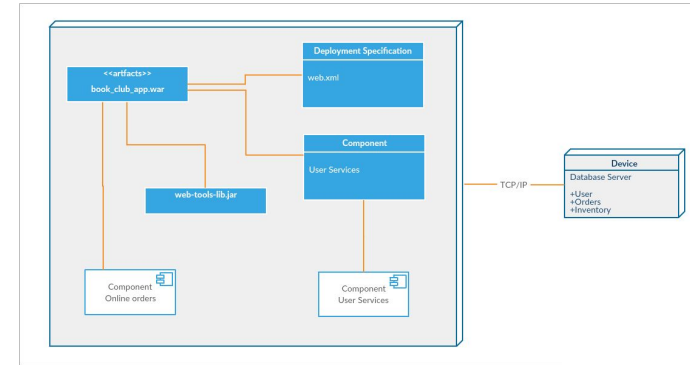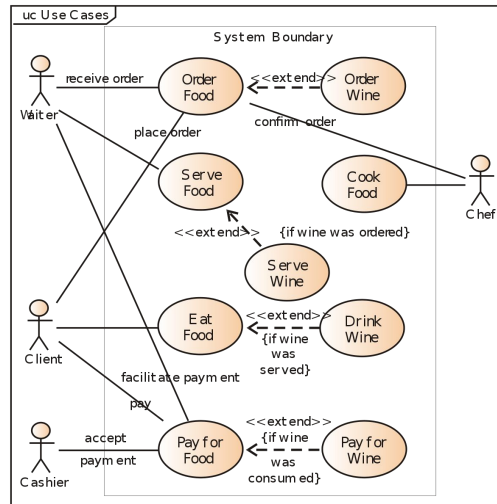
- Object Diagrams

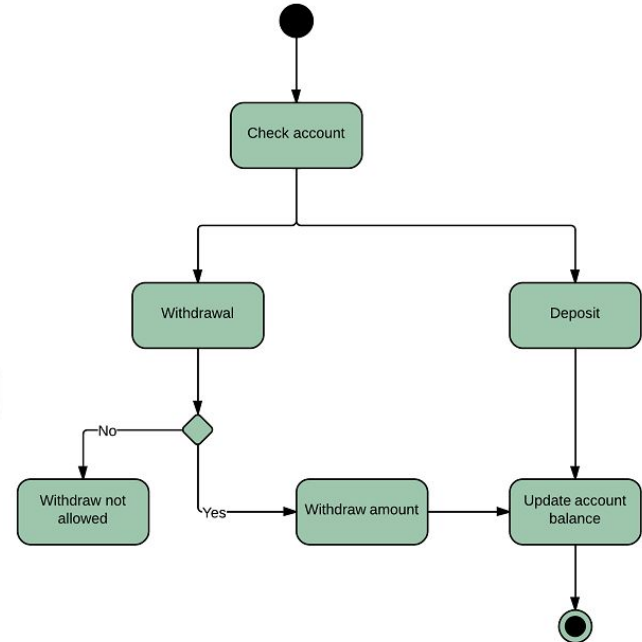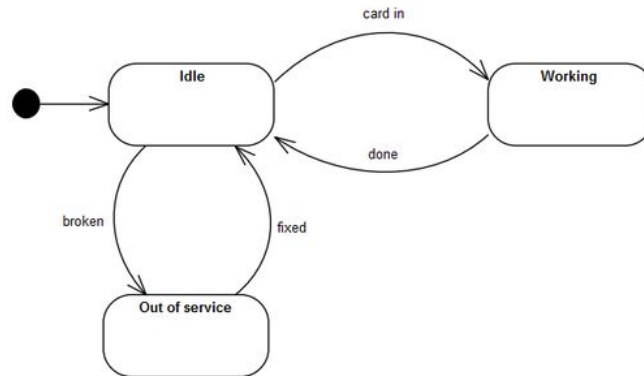- Package Diagrams

- Class Work

Lesson 06: Deployment Diagrams & Use Cases

- Deployment Diagrams

- Use Cases

- Class Work
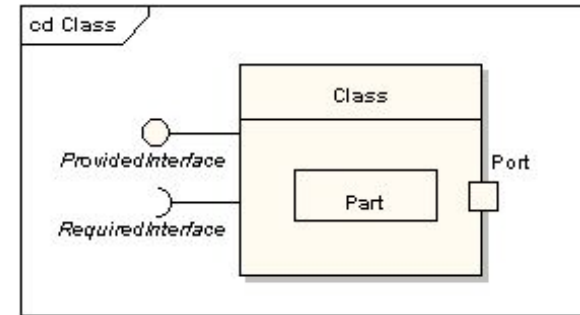
Lesson 07: State Machine Diagrams & Activity Diagrams
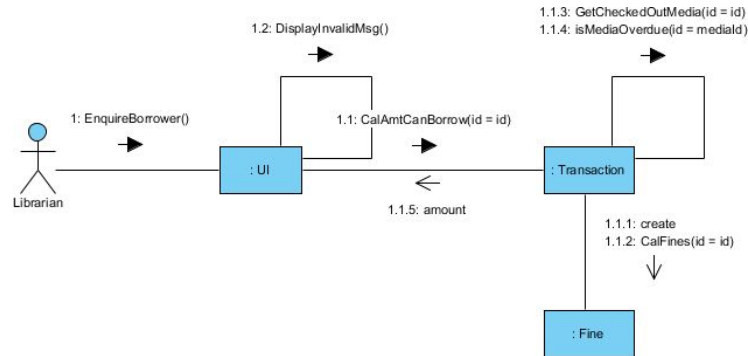
- State Machine Diagrams
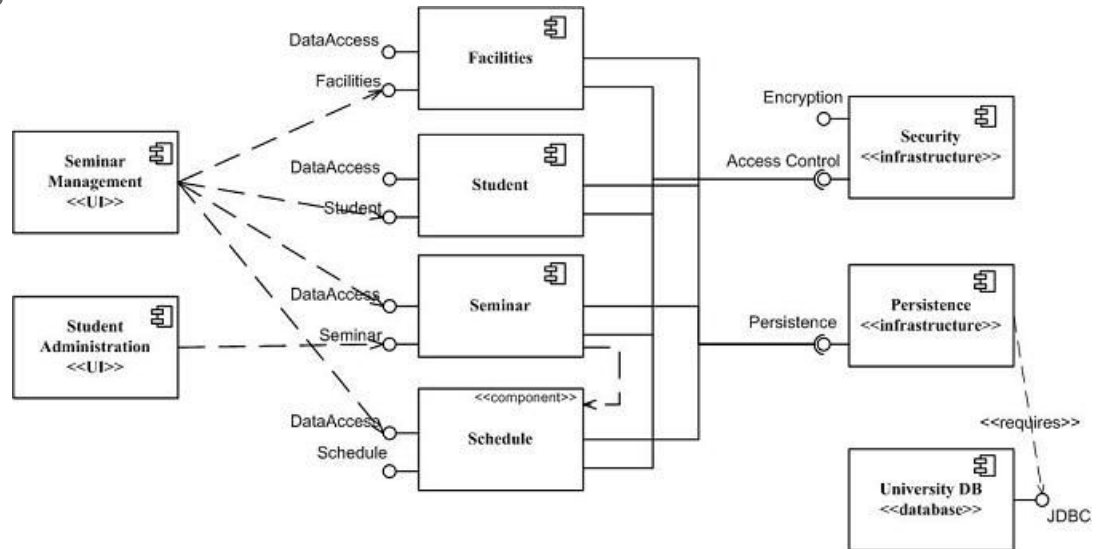
- Activity Diagrams

- Class Work

Lesson 08: Communication Diagrams & Composite Structures

- Communication Diagrams
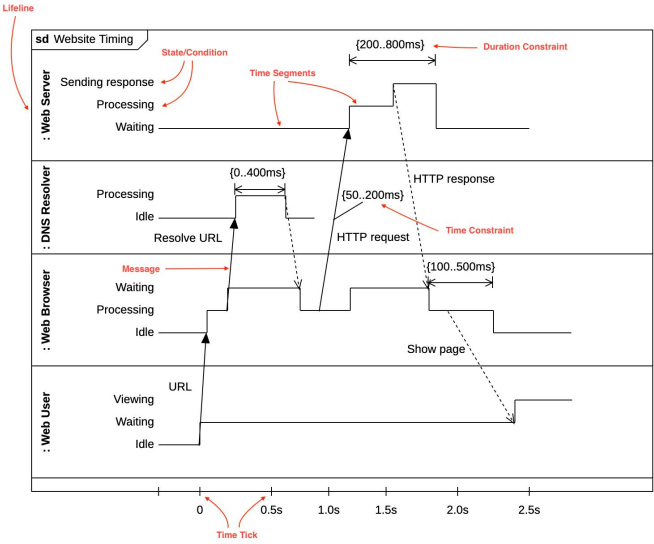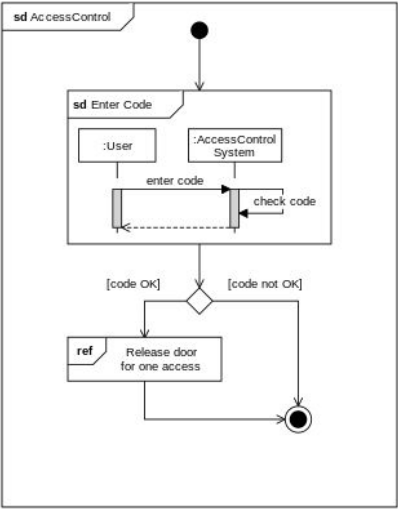
- Composite Structures

- Class Work

Lesson 09: Component Diagrams & Collaboration

- Component Diagrams

- Collaboration

- Class Work

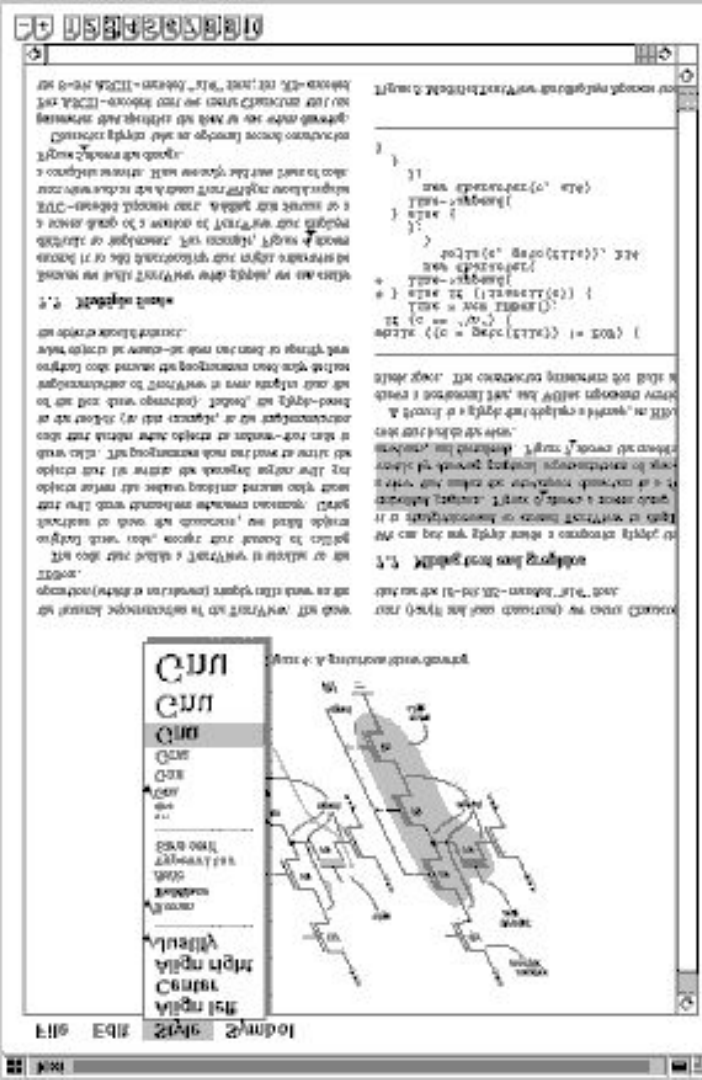# Lesson 10: Interaction Overview Diagrams & Timing Diagrams

- Interaction Overview Diagrams

- Timing Diagrams

- Class Work

Course organization

Lesson 11: Design Patterns

- Introduction

- A Case Study: Designing a Document Editor

- Class Work

Lesson 12: Design Pattern Catalog

- Creational Patterns

- Class Work

DESIGN PATTERNS		
CREATIONAL	STRUCTURAL	BEHAVIORAL
FACTORY METHOD	ADAPTOR CLASS	INTERPRETER
BUILDER	ADAPTOR OBJECT	TEMPLATE METHOD
ABSTRACT FACTORY	BRIDGE	CHAIN OF RESPONSIBILITY
PROTOTYPE	COMPOSITE	STRATEGY COMMAND
SINGLETON	DECORATOR	VISITOR ITERATOR
	FACADE	MEDIATOR
	FLYWEIGHT	MEMENTO
	PROXY	OBSERVER
		STATE
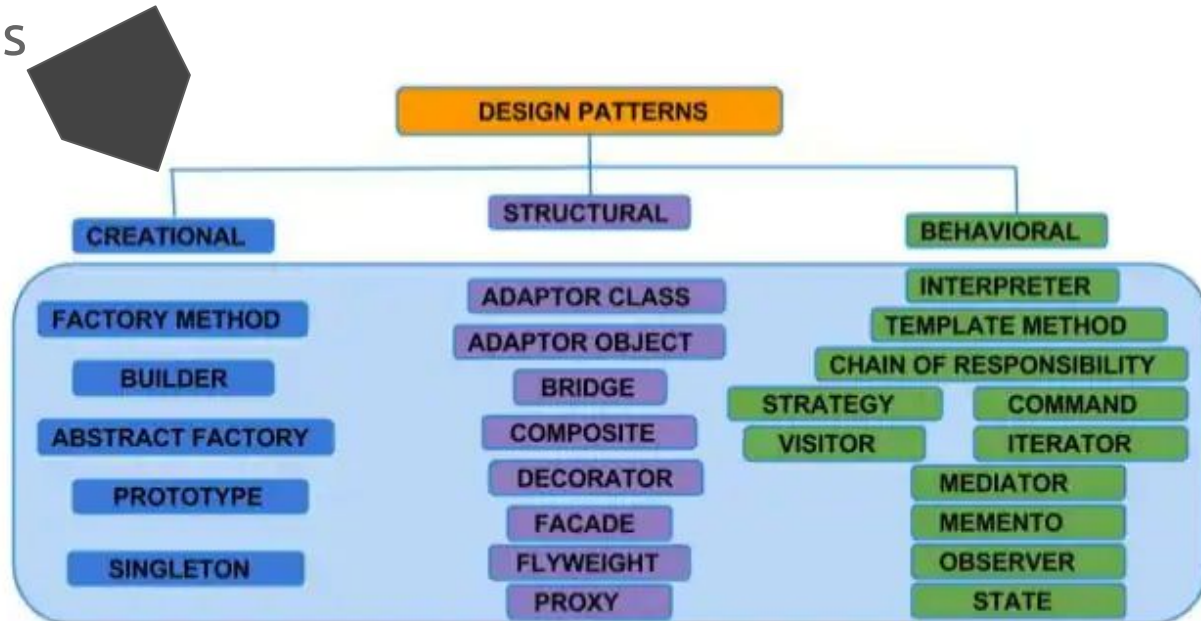
Lesson 13: Design Pattern Catalog

- Structural Patterns

- Class Work
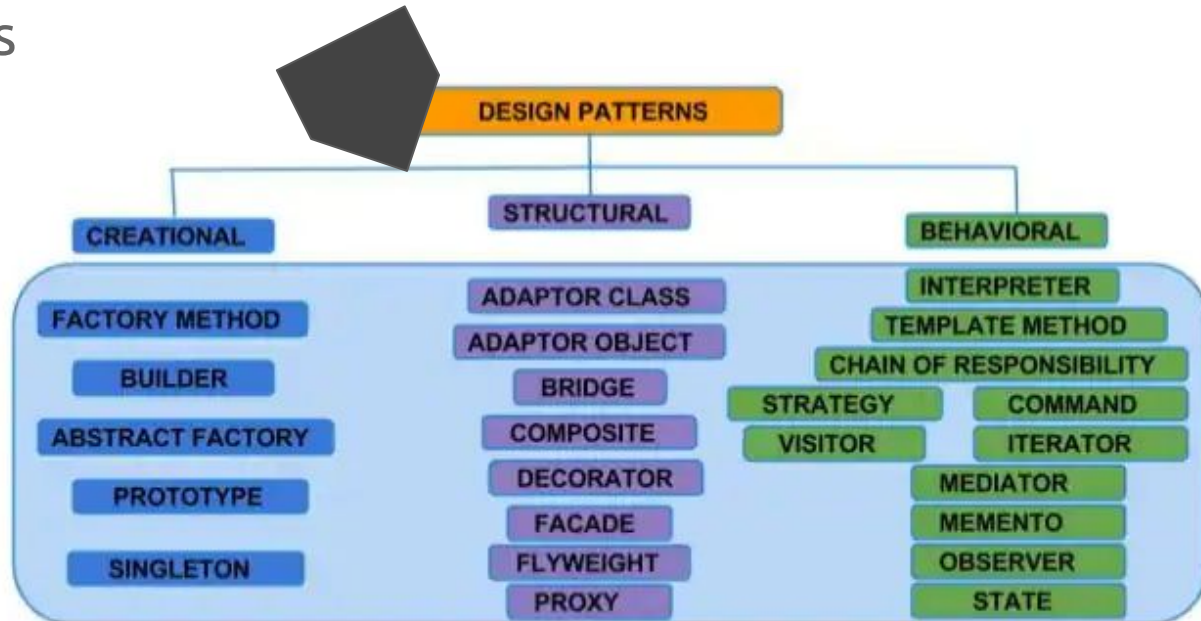
Lesson 14: Behavioral Patterns

- Behavioral Patterns

- Class Work

DESIGN PATTERNS

CREATIONAL | STRUCTURAL | BEHAVIORAL

ADAPTOR CLASS
INTERPRETER

FACTORY METHOD
ADAPTOR OBJECT
TEMPLATE METHOD

BUILDER
BRIDGE
CHAIN OF RESPONSIBILITY

STRATEGY | COMMAND

ABSTRACT FACTORY
COMPOSITE
VISITOR | ITERATOR

DECORATOR
MEDIATOR

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FLYWEIGHT
OBSERVER

SINGLETON
PROXY
STATE
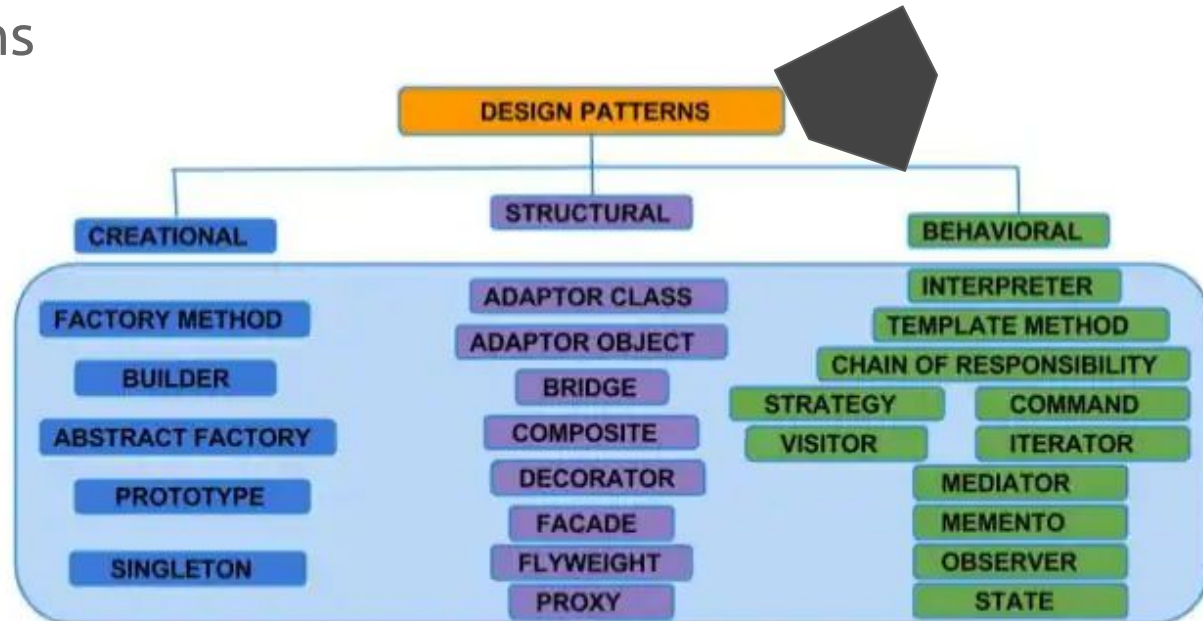
Lesson 15: Conclusion

- Conclusion

- Review

Course organization

Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	ES	MP
Lectures	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		**15**
Practices	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		**15**
Assignments		2		3		3		3		3		4		4			**22**
Midterm Exams							8										**8**
Final Exam																40	**40**
MP for EC	2	4	2	5	2	5	10	5	2	5	2	6	2	6	2	40	
																TOTAL	**100**

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

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Practice References:
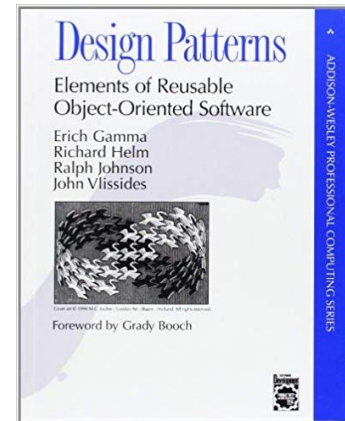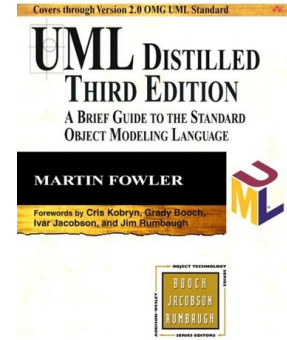
- StarUML (- http://staruml.io)
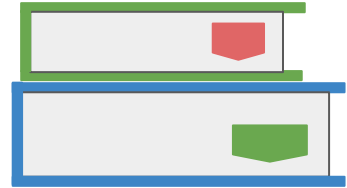
Course organization

References:

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

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