

Group Assignment

Software Architecture and Design

Parinya Ekaranya

Parinya.Ek@kmitl.ac.th

Software Design Project

- ❖ Group of 7-10 people (or 6 people in some cases)
- ❖ This assignment is worth 20%

1.	Software Modelling	5%
2.	Software Quality	4%
3.	Design Patterns	3%
4.	Functionalities	4%
5.	Presentation and Peer evaluation	4%

Software Design Project: Proposal

- ❖ From discussion among group members, each group needs write a short project proposal:
 - ❖ a problem statement (about a half of A4 page)
 - ❖ a brief explanation of a software solution to solve/relieve the problem (about a half of A4 page)
- ❖ Software solution must be related to at least one of business sectors shown in the next page.
- ❖ Each project proposal must be submitted to the lecturer for approval before mid-semester exam.

List of Allowed Business Sectors

- ❖ Retail
- ❖ Banking
- ❖ Financial & Securities
- ❖ Insurance
- ❖ Healthcare
- ❖ Education
- ❖ Media & Publishing
- ❖ Telecommunication
- ❖ Transportation & Logistics
- ❖ Hotel & Lodging

Software Design Project: Implementation Scope

- ❖ 3 bounded contexts for group of 8 people or less.
- ❖ 4 bounded contexts for group of 9 people or more.
- ❖ Any programming language is allowed as long as OOP features are supported.
- ❖ A project should contain at least user-defined 50 classes (as in object-oriented programming). Classes from framework/library do not count.
- ❖ Proposed application software can be in any form:
 - ❖ Desktop application
 - ❖ Web application
 - ❖ Mobile application

Software Design Project: Modelling

- ❖ UML will be used for software modelling.
- ❖ The UML diagrams will be based on UML version 2.5.1 specification.
- ❖ Each group needs 4 to 5 UML diagrams:
 - ❖ At least one diagram for the architecture of software (please select a diagram type based on your software architecture)
 - ❖ One class diagram for each bounded context

Penalty:

- ❖ -0.1% for each flaw/mistake
- ❖ A penalty in one diagram does not carry to another diagram.

Software Design Project: Quality

- ❖ Each group must propose and measure quality of software with at least 8 quality attribute scenarios.
- ❖ At least 1 quality attribute scenario for **availability**
- ❖ At least 1 quality attribute scenario for **integrability**
- ❖ At least 1 quality attribute scenario for **modifiability**
- ❖ At least 1 quality attribute scenario for **performance**

Software Design Project: Design Pattern

- ❖ Apply at least 3 design patterns in the project
- ❖ Must explain what problem does a design pattern solve
- ❖ Must explain how a design pattern is used
- ❖ Only the appropriate use of design pattern is worth!!

Software Design Project: Functionality

- ❖ The functionalities must address the problem stated in the proposal.
- ❖ The assessment will be based on the percentage of completed functionalities.
- ❖ Quality of functionalities will not be assessed.

Software Design Project: Presentation

- ❖ Present the software project and its design to the class in 14th week
- ❖ 19-minutes presentation for each group
 - ❖ A brief introduction of what the software project is all about
 - ❖ Explain the software architecture and design with the supporting information (short description / UML diagrams)
 - ❖ Explain the use of design patterns in the project with supporting information (short description / snippet of code / UML diagram)
 - ❖ Demonstrate functionalities of the software
 - ❖ Explain at least 3 quality attributes scenarios
- ❖ The results will be based on peer evaluation.

BONUS !!!

- ❖ The software that can interoperate with software from other groups may receive +1 for each interoperable group.
- ❖ The bonus may be awarded based on the discretion of the lecturer.
- ❖ Bonus is maxed at 3 marks/points.

Submission

- ❖ Please create a git repository for the project.
- ❖ Each group needs to write a report that covered required information:
 - ❖ Proposal
 - ❖ Software architecture
 - ❖ Software design
 - ❖ Design patterns
 - ❖ Quality attribute scenarios
- ❖ The report can be in any format: docx, pdf, latex, etc.
- ❖ Please commit the report as well as the presentation file on the git repo.
- ❖ Submit a link to git repo on Microsoft Teams

QUESTIONS?