

1 Lecture 6

1.1 Exercise 1: Evaluating Design Patterns

Objective:

The goal of this exercise is to critically evaluate and select suitable software architecture and design patterns based on the quality attributes identified for your systems.

Tasks:

- *Explore Design Patterns:* Investigate various software design patterns, focusing on their applications, advantages, and potential drawbacks in different scenarios.
- *Relate Patterns to Quality Attributes:* For the quality attributes previously identified and formulated for your system:
 - Identify and justify which architectural and design patterns are most relevant or suitable.
 - Reflect on how chosen patterns enhance or could potentially detract from each quality attribute.
- *Consider Implementation Challenges:* Evaluate potential challenges or difficulties in implementing the identified patterns within your existing system architecture.
- *Document Findings:* Compile your findings, justifications, and reflections into a structured document.

Deliverables:

- A document detailing the selected architectural and design patterns, their relevance to the identified quality attributes, potential implementation challenges, and any additional reflections or insights.

Assessment Criteria:

Assessment will focus on the logical reasoning behind pattern selection, the depth of reflection concerning quality attributes, understanding of implementation challenges, and overall coherence and clarity of documentation.

1.2 Exercise 2: Architecture-Quality Attributes Evaluation

Objective:

This exercise aims to perform a critical analysis of how well the current architecture of your system adheres to, or provides for, the previously defined quality attributes.

Tasks:

- *Review Quality Attributes:* Revisit the quality attributes formulated for your system, ensuring a solid understanding of each attribute's intention and importance within your project context.
- *Assess Architecture Against Quality Attributes:*
 - Analyze the extent to which the current architecture of your system fulfills each quality attribute.
 - Identify and document areas where the architecture successfully aligns with, or diverges from, desired quality attributes.
- *Identify Improvement Areas:* Pinpoint areas or elements of the architecture that could be refined or redesigned to better align with the intended quality attributes. Provide justifiable recommendations for changes or enhancements.

Deliverables:

- A document comprising the analysis of the current architecture against each quality attribute, identified areas for improvement with justifiable recommendations.

Assessment Criteria:

Your evaluation will be assessed based on the depth and accuracy of the analysis, the feasibility and justifiability of identified improvement areas and recommended changes, and the thoroughness of the impact analysis.