Individual Assignments 2 & 3: Define the right requirements & Signup Sheet

Work on the selected concept and document it into the following short, mid-size, and detailed Pattern Documentation Templates.

Short Pattern Documentation Template = 100 Points, divided as following (Must do):

Name 05 Points
Context + 3 Scenarios 20 Points --

One point / Any Extra Scenario – Up to five

Problems
  Functional Reqs 30 Points
  3 Non-Func. Reqs 10 Points

Solution
  Pattern Class Diagram 15 Points
  Participants
  CRC Cards
  Five Scenarios 20 Points

Case Study #1 (CS01) Extra
  CS01 Description 03 Points
  CS01 Class Diagram 07 Points
  CS01 Use Case 07 Points
  CS01 Seq. Diagram 03 Points

Total 100 Points
Extra Points 25 Points
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Mid-Size Pattern Documentation Template = 100 Points, divided as following (Must do):

Name 05 Points
Context + 3 Scenarios 10 Points --

One point / Any Extra Scenario – Up to five

Problems
Detailed Pattern Documentation Template = 100 Points, divided as following (Must do):

Name 01 Points
Context + 3 Scenarios 09 Points --
One point / Any Extra Scenario – Up to five

Problems
   Functional Reqs 10 Points
   3 Non-Func. Reqs 05 Points
   6 Challenges 10 Points
   12 Constraints 05 Points

Solution
   Pattern Class Diagram 10 Points
   Participants
   CRC Cards
   Five Scenarios 10 Points

Total 100 Points
Extra Points 25 Points
CRC Cards
Five Scenarios

Case Study #1 (CS01)
  CS01 Description  02 Points
  CS01 Class Diagram  05 Points
  CS01 Use Case  05 Points
  CS01 Seq. Diagram  03 Points

Case Study #2 (CS02)
  CS02 Description  02 Points
  CS02 Class Diagram  05 Points
  CS02 Use Case  05 Points
  CS02 Seq. Diagram  03 Points

You may add an extra case study for 15 extra points.

Related Pattern:
  MT or TM  05 Points
  Comparative Study  05 Points

Measurability & Comparative Study (CS)
  Quantitative + CS  05 Points
  Qualitative + CS  05 Points

Total  100 Points
Extra Points  20 Points

Extra Points / Assignment or Project of overall points / 3:
  • If your score without the extra points
    1. 70+ Points you will get an additional 10 Extra Points
    2. 80+ Points you will get an additional 20 Extra Points
    3. 90+ Points you will get an additional 30 Extra Points
    4. 100+ Points you will get an additional 50 Extra Points

The purpose of this assignment is to define the context, the right requirements, its challenges and constraints using the following template.

*Pattern Documentation Template:*
  • Name: Presents the name of the presented pattern.

<table>
<thead>
<tr>
<th>Length: Few lines</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Provide short definition of the term (Name)</td>
</tr>
</tbody>
</table>
- Compare the name of the patterns with other selective name and conclude with the right selection of the name.
- Why did you choose that specific name
- Justify the name (such as why use “Any…” as a prefix for BO only)

You may answer the following questions:
- Why did we choose that specific name?
- Suggest a nickname for this pattern that is related to knowledge

- **Context:** Gives possible scenarios for the situations in which the pattern may recur. It is important in this Section that you motivate the problem you solve in an attractive way. For example, if I am writing a pattern about Trust, I would flush the trust in the context of e-commerce, for example. Keep this Section short yet exciting
- Insert examples of 3 scenarios with different context

**Length:** 1/4 to 1/3 Pgs
- Describe the boundaries
- List basic scenario – context,
- Show by good examples where the pattern can be applied *(3 scenario)*
- **Write the scenarios with EBT and BOs in mind**
- For example “account”… would have ownership and handler context, can be applied to banking Internet Providers, private clubs, etc
- Discuss briefly a few unique context of the pattern.

- **Problem:** Presents the problem the pattern concentrates on. This is one of the hardest parts in the pattern writing. Do not try to write it quit well in the first iteration, most probably; you will not be able to! The problem should focus on the core purpose of the pattern and should be able to answer the question: In what situation I may benefit from your pattern?

**Length:** 1/4 to 1/3 Pgs
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Has to be about a specific problems and descriptions = actual requirements of the pattern
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Name the goal of the BO that you signed for and describe the requirements briefly.

**There are two types of requirements:**
1. Functional Requirements
2. Non-Functional Requirements

- **Challenges and Constraints:** Illustrates the challenges and the constraints that the problem needs to resolve. You may create two subsections: (1) Challenges and (2) Constraints. In particular, in this Section you try to say, this is not a trivial problem, and trivial solution may not work. Be clear and brief. One major mistake in writing this Section is that you mix the problem statement with the forces themselves. After writing this Section, try to read again the problem statement and make sure that they are not the same! It happens!!
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Challenge Template:
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**Challenge ID,**
---
**Challenge Title,**
Context,
Challenge Description,
Challenge solution

Length: 1/2 Pgs
• Describe the challenges that will be overcame by the pattern
• Describe the constraints related to the pattern such as multiplicities, limits and range.
• Make sure to list the challenges and constraints as bullets.

1. Solution: Pattern Structure, Participants, and CRC Cards Gives the class diagram of the pattern (EBT or BO). It also introduces briefly each class and its role. (associations, aggregations, dependencies, and specializations) should be included in the class diagram. Association classes, constraints, interfaces, tagged values, and notes must be included in the class diagram. A full description of the class diagram should be included with the final submission.

2. Describe briefly and Map 5 different applications using the pattern using the following table format:

<table>
<thead>
<tr>
<th>EBT</th>
<th>BOs</th>
<th>App-1 Name - IOs</th>
<th>App-2 Name - IOs</th>
<th>App-3 Name - IOs</th>
<th>App-4 Name - IOs</th>
<th>App-5 Name - IOs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

• Applicability or Case Studies With Illustrated Examples -- Provides clear, significant, and detailed TWO case studies for applying the pattern in different contexts. The following sub elements represent the required details in one case.
1. Case Studies. Shows the scenario of two cases studies from different contexts
2. Class Diagram– Pattern + IOs
3. Use Case. Presents the different Use Cases and the Actors for each case study, and shows the relation between the different Use Cases, and the relation between these Use Cases and the Actors of the system. You need to insert test case for EBTs and BOs only
4. Use Case Description. Gives detailed description for each Use Case. (Sometimes each would be so long for a paper, but at least a sample of these Use Cases! Just my opinion)
5. Behavior Diagram. Presents the sequence diagrams and/or the state transition diagrams of the Use Cases.

Length: 2-4 pages total ~ 1 Page each
Show 2-3 Distinct Scenarios
Description of the problem statement of the particular problem
Describe the Model
Use Case Description (don’t need to do use case diagrams)
Sequence Diagrams
• **Related Patterns & Measurability:** Shows other patterns that usually interact with the described pattern, and those who are included within the described pattern. Related patterns can be classified as *related analysis* or *related design patterns*. Related patterns usually share common forces and rationale. Also, it is possible that you give some insight of other patterns that can/need be used with the proposed patterns, for example, in the case of AnyAccount pattern; we might point out to the AnyEntry pattern as a complementary pattern. There are rooms for contrasting and comparing the existing patterns with the documented pattern. This section also provides a few metrics for measuring several things related to the pattern structure, such as complexity and size, Cyclomatic Complexity, Lack of Cohesion, Coupling Between Object Classes, etc.

**Length: 1/2 + Pgs**

Two approaches::

- Search for an existing traditional pattern on the same topic. Compare with traditional existing pattern’s model with reference with ours
- If existing patterns do not exist, select a single definition of the name of our pattern, develop a traditional meta model class diagram and describe it briefly.

Measurability compare our pattern to other models on: Number of behaviors and Number of classes. Justifications of why the numbers of behavior or classes so high or low. You may compare and comments on other quality factors, such as reuse, extensibility, integration, scalability, applicability, etc.

**What need to do?**
1. Check if you can find an existing pattern if not create a traditional model or a meta model and insert in this document
2. Compare with the stable pattern in this report using the 6 essential properties of a model or 6 adequacies.
3. One Quantitative Measure and Compare
4. One Qualitative measure and Compare