CENG350 Software Engineering, Spring 2022-2023

Software Architecture Description (SAD)

SAD Outline and Evaluation for afetbilgi.com

In compliance with ISO/IEC/IEEE 42010; see clause 6 in particular.

For the definitions of the viewpoints to be used, refer to Rozanki & Woods' 'A Viewpoint Catalog', (R&W) highlighted and commented.

Feel free to revise and extend the material that overlaps with your SRS.

Title Page **[0.5 pt]**

Table of Contents **[0.5 pt]**

List of Figures **[0.5 pt]**

List of Tables (as necessary) [**0.5 pt]**

1. Introduction **[4 pts subtotal]**
   1.1. Purpose and objectives of afetbilgi.com **[2 pts]**
   1.2. Scope **[1 pts]**
   1.3. Stakeholders and their concerns **[1 pts]**
2. References **[1 pts]**
3. Glossary **[1 pts]**

4. Architectural Views **[50 pts subtotal]**
   4.1. Context View **[9 pts subtotal]** *(R&W chapter 16)*
      4.1.1. Stakeholders' uses of this view **[1 pt]**
      4.1.2. Context Diagram **[2 pts]**

      Context Diagram should display all external entities that may interact with the system. This section should ***include Context Diagram and explanations*** *for context diagram.*

      4.1.3. External Interfaces **[3 pts]**

      This section should include ***External Interfaces Class Diagram****. Descriptions of the operations given in the external interface class diagram should also be given.* ***You should aim for 3 external interfaces.***

      4.1.4. Interaction scenarios **[3 pts]**

      This section includes ***2 Activity Diagrams*** *to show interaction sequences taking place over the external interfaces. Choose 2 most complex interactions for activity diagrams. They must be different from those in your SRS document.*

   4.2. Functional View **[19 pts subtotal]** *(R&W chapter 17)*
      4.2.1. Stakeholders' uses of this view **[1 pt]**
      4.2.2. Component Diagram **[10 pts]**

*This section should include **Component Diagram and explanations** for component diagram. The provides/requires relationship between components must be shown.*

4.2.3. Internal Interfaces **[4 pts]**

*This section should include **Internal Interfaces Class Diagram**. Descriptions of the operations given in the internal interface class diagram should also be given. **You should aim for 4 internal interfaces.***

4.2.4. Interaction Patterns **[4 pts]**

*This section includes **3 Sequence Diagrams** to show messaging sequences taking place among the system components over the internal interfaces. Choose 3 most complex interactions for sequence diagrams. They must be different from those in your SRS document.*

4.3. Information View **[11 pts subtotal]** *(R&W chapter 18)*

4.3.1. Stakeholders' uses of this view **[1 pt]**

4.3.2. Database Class Diagram **[7 pts]**
***Database Class Diagram** involving the key database or main memory objects. Complete with relevant associations. Descriptions of the non-obvious names (for classes, attributes, operations) should also be given.*

4.3.3. Operations on Data **[3 pts]**

*Descriptions of the operations given in the database class diagram. These operations may possibly deal with storage and handling of information regarding stores, customers, products and so on. **Operations should be listed in a table or using bullets.***
These are usually CRUD (Create Read Update Delete) operations.

4.4. Deployment View **[7 subtotal]** *(R&W chapter 21)*

4.4.1. Stakeholders' uses of this view **[1 pt]**

4.4.2. Deployment Diagram **[6 pts]**

*This section should include **Deployment Diagram and explanations** for deployment diagram.*

4.5. Design Rationale **[4 pts = 4*1]**

*State **one rationale** specifically referring to each view presented.*

5. Architectural Views for Suggestions to Improve the Existing System **[50 pts subtotal]**

5.1. Context View **[9 pts subtotal]** *(R&W chapter 16)*

5.1.1. Stakeholders' uses of this view **[1 pt]**

5.1.2. Context Diagram **[2 pts]**

***Context Diagram for your suggestions** should display all external entities that may interact with the system. This section should **include Context Diagram and explanations** for context diagram.*

5.1.3. External Interfaces **[3 pts]**

*This section should include **External Interfaces Class Diagram for your suggestions**. Descriptions of the operations given in the external interface class diagram should also be given. **You should aim for 2 external interfaces.***

5.1.4. Interaction scenarios **[3 pts]**

*This section includes **1 Activity Diagram** to show interaction sequences taking place over the external interfaces **for your suggestions**. Choose the most complex interaction for activity diagram. They must be different from those in your SRS document.*

5.2. Functional View **[19 pts subtotal]** *(R&W chapter 17)*

5.2.1. Stakeholders' uses of this view **[1 pt]**

5.2.2. Component Diagram **[10 pts]**

*This section should include **Component Diagram and its explanations for your suggestions**. The provides/requires relationship between components must be shown.*

5.2.3. Internal Interfaces **[4 pts]**

*This section should include **Internal Interfaces Class Diagram for your suggestions**. Descriptions of the operations given in the internal interface class diagram should also be given. **You should aim for 2 internal interfaces.***

5.2.4. Interaction Patterns **[4 pts]**

*This section includes **1 Sequence Diagram** to show messaging sequences taking place among the system components over the internal interfaces **for your suggestions**. Choose the most complex interaction for sequence diagram. They must be different from those in your SRS document.*

5.3. Information View **[11 pts subtotal]** *(R&W chapter 18)*

5.3.1. Stakeholders' uses of this view **[1 pt]**

5.3.2. Database Class Diagram **[7 pts]**
***Database Class Diagram** involving the key database or main memory objects **for your suggestions**. Complete with relevant associations. Descriptions of the non-obvious names (for classes, attributes, operations) should also be given.*

5.3.3. Operations on Data **[3 pts]**

*Descriptions of the operations given in the database class diagram. These operations may possibly deal with storage and handling of information regarding stores, customers, products and so on. **Operations for your suggestions should be listed in a table or using bullets.***
These are usually CRUD (Create Read Update Delete) operations.

5.4. Deployment View **[7 subtotal]** *(R&W chapter 21)*

5.4.1. Stakeholders' uses of this view **[1 pt]**

5.4.2. Deployment Diagram **[6 pts]**

*This section should include **Deployment Diagram and its explanations for your suggestions**.*

5.5. Design Rationale **[4 pts = 4*1]**

*State **one rationale** specifically referring to each view presented.*

Overall Document Quality **[2 pts]**

What is expected for SAD part-1:
The structure and format of your SAD document must be complete. All (sub)section titles must be present. The sections can be empty except **from Title Page to Glossary, and Sections 4.1.2.** Section 4.1.2 will have the **Context Diagram and explanations** for the context diagram. This is the minimum requirement, you can do more for SAD part-1.

Individual feedback will not be provided for part-1. However, common obvious mistakes will be summarized within two days of the deadline.

Architectural Views for Suggestions to Improve the Existing System (Section 5):
Section 4 is based on "afetbilgi.com" as is. Section 5 presents your own suggestions to improve existing "afetbilgi.com" project. Section 5 exists to show architectural views of your suggestions to improve "afetbilgi.com". Your useful and realistic suggestions to improve "afetbilgi.com" have been modeled in SRS final, these suggestions' architectural views will be presented in this section. Section 5 will have the same organization as Section 4. In some cases you may need to reproduce some material from Section 4 for the sake of clarity; keep it at minimum. In other words, avoid unnecessary duplication between section 4 and section 5.

UML Diagrams (**Sections 5.1.2, 5.1.3, 5.2.2, 5.2.3, 5.3.2, 5.4.2**) **resulting from your suggestions** should be given in Section 5. UML Diagrams after your suggestions should be created here. If your suggestions provide **any changes different than existing system's UML diagrams** (**Sections 5.1.2, 5.1.3, 5.2.2, 5.2.3, 5.3.2, 5.4.2**), these changes should be drawn using different color **-color yellow is a good choice-** for diagrams in Section 5. To sum up, diagrams **(Context Diagram, External Interfaces Class Diagram, Component Diagram, Internal Interfaces Class Diagram, Database Class Diagram, Deployment Diagram)** in Section 5 should include both existing project architectural views and architectural views after your suggestions. Your suggestions on UML diagrams in Section 5 should be created **using different color** so that we can easily understand your suggestions on diagrams.

Section 5.1.4 includes **1 Activity Diagram** to show interaction sequences taking place over the external interfaces **for your suggestions**. You should choose the most complex interaction for activity diagram.

Section 5.2.4 includes **1 Sequence Diagram** to show messaging sequences taking place among the system components over the internal interfaces **for your suggestions**. You should choose the most complex interaction for sequence diagram.

For the **Section 5.3.3**, **CRUD (Create Read Update Delete) operations for your suggestions** should be listed in a table or using bullets, you don't need to list existing project CRUD operations in this section.

What is to be submitted:
One submission per group.
A zip file submitted to ODTUClass and named as **group#** including

1) SAD document (including diagrams) named as **sad.pdf**.
2) UML diagrams' project files as separate files, which must be able opened and used by StarUML.

Grading (20% of overall course grade):

SAD part-1 → 2%

Document Structure (All sections are present) → **10 pts**
from Title Page to Glossary → **45 pts**
4.1.2 → **45 pts**

SAD final → 18%

The grading rubric above is for SAD final.
Total collectable points = 110.
Awarded points = **min (points collected, 100)**