**Weight:** 20%

**Marks:** /50

# Project: Phase 2 – Final Analysis and Preliminary Design

## Introduction

You have reached the second check point in creating a software design for your external client. At this point, your instructor has provided you with formal feedback on your project selection and preliminary analysis (Phase 1). In Phase 2, you will implement that feedback and continue to develop your design by adding new requirements.

It is important to note that this is an *iterative process*. You should **not** expect to write this document without regular revisions. It’s important that your team discusses the system and its processes while continuing to revise the document. As you work through this process, you’ll discover new ideas and concepts.

While some class time will be allocated to work on this project, most of the work will be done outside of the classroom. Your instructor will periodically review your work as you progress and will provide guidance. You have approximately three weeks to complete this phase of the project. Refer to Brightspace for exact due dates.

## Equipment and Materials

For this project, you will need:

* Diagramming software such as Software Ideas Modeler (SIM)
* Word processing software such as MS Word
* UI design program such as Adobe XD

## Instructions

1. Read through the detailed instructions and marking criteria contained in this document.
2. Using your submission from Phase 1 as a starting point, work with your team to implement your instructor’s feedback. Reach out to your instructor as needed for clarification.
3. Develop your existing design document by expanding and adding sections, as outlined in the *Documentation Requirements* section.
4. Submit your completed preliminary analysis document to Brightspace by the posted due date.

## Documentation Requirements

To analyze and design a system, it is vital to understand the processes of that system. Your design document is a model of the system processes and how the system will be built. Your design document already contains the following sections:

* Statement of the project and project sponsor
* Use case diagrams and use case descriptions
* Class diagram
* Team constitution

In this phase, add or expand the following sections:

Revised Use Case Diagram and Use Case Descriptions in Extended Format

* Correct and revise your Use Case Diagram as needed, referring to the feedback you received on the first version of your diagram.
* Using this revised information, write the Use Case Descriptions in the Extended Format.
  + Provide a detailed description of each use case. These descriptions should include the primary workflow and how to deal with possible exception handling.
  + An example of a Use Case Diagram in Extended Format is provided at the end of this document.

#### Preliminary User Interface Design

* Using a UI design program such as Adobe XD, create mock-ups of possible user interfaces. Your goal is to design user interfaces that capture the workflow of the use cases.
* While working through this process, look at the data being presented in the interface and ask the question: Does the current Class Diagram contain all the data that is being presented?

#### Data Storage and Persistence

* Every project will require data storage (e.g., files, a relational database or a non-relational database).
* Research data storage and persistence with your team.
* Provide a detailed explanation of your choice and how you will implement it.

#### Entity Diagram

* Based on your research, create a conceptual Entity Relationship Diagram that describes the relationships between the classes.
* Your diagram should list the appropriate classes and the relationship between them (e.g., 1 to 1; 1 to many).

#### Revised Class Diagram

* As your team works through the above processes, revise your Class Diagram. Answer these questions:

1. Have we accurately captured all the data?
2. What new classes are required to retrieve and present the data?
3. What broker and controller classes are required to retrieve and present the data?

#### System Architecture and Patterns

* Explain the differences between system architectures and design patterns. Include the system architecture and any design patterns you may use for this project.

**Note:** Refer to chapters 9 through 14 in your textbook on the topics of architecture and patterns.

* This section should be approximately 250 words (one page).

### Submission Requirements

* Formatting and Completeness: Your document must continue to conform to the formatting guidelines outlined in Phase 1. Spelling and grammar errors will result in grade deductions, and there are significant penalties for missing or incomplete elements.
* Diagrams and Descriptions: These must comply with the UML guidelines from the course textbook and class examples. Marks will be deducted for errors.
* Consistency: Ensure consistency between the descriptions and all diagrams.
  + Example: If your use case descriptions repeatedly mention ‘client’ but there is no ‘client’ class listed, this is inconsistent.
  + Example: Data classes in the Class Diagram must be correctly described in the Entity Relationship Diagram.

Only one submission is required per group. Submit the document as a single **.docx** or **.pdf** file. The submission must be received by the due date posted in Brightspace.

## Marking Criteria

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Categories** | **0 marks** | **7 Marks** | **10 Marks** | **Marks** |
| **Revised Use Case Diagram and Use Case Descriptions (Extended Format)** | Incomplete or missing information. Use Case Descriptions are not in the Extended Format. | Minor errors. Missing some documentation or Use Case Descriptions missing information. | Use Case Diagram and Use Case Descriptions are complete and in the correct format. | /10 |
| **Preliminary User Interface Design** | Does not conform to UI/UX Guidelines. Incomplete or missing UI components. | Minor errors or missing descriptions from the use cases. | Accurate examples of described workflow. Corresponds to correct UI/UX guidelines. | /10 |
| **Data Storage and Persistence** | Inadequate research. ERD does not correctly list the corresponding entity classes in the class diagram. | One or two missing elements. Minor errors listing entity relationships. | ERD is accurate and consistent with system information. | /10 |
| **Revised Class Diagram** | Poor or no consistency between use cases, ERD and class diagram. | Two or fewer inconsistencies between use cases, ERD and class diagram. | Revised Class Diagram is complete. | /10 |
| **System Architecture and Patterns** | Missing or inadequate research. Serious errors in what was researched and in the described system. | Minor errors in documenting what was researched and the proposed system. | Well written description and documentation. | /10 |
| **Total** | | | | **/50** |

## Example Use Case Description in Extended Format

Use Case 3: Maintain Users

Precondition: Manager has successfully logged in. Maintain User screen is displayed.

Postcondition: Switchboard screen is displayed.

Limitation: Manager can abort any operation and return to switchboard screen.

|  |  |
| --- | --- |
| **Actor Action** | **System Response** |
| Manager selects either:   * 1 Report of all users (Alternate Flow 1.1) | 2 Display report of all users. |
| -or-   * 3 Maintain user (Alternate Flow 3.1) | 4 Search for, create, update or delete a user and display results. |
|  | 5 Display switchboard screen. |

Alternate Flow 1.1

|  |  |
| --- | --- |
| **Actor Action** | **System Response** |
|  | 1.1.1 Get list of all users. |
|  | 1.1.2 Display report of all users. |

Alternate Flow 3.1

|  |  |
| --- | --- |
| **Actor Action** | **System Response** |
|  | 3.1.1 Display user maintenance screen. |
| 3.1.2 Manager enters user information (username, password and/or security level). |  |
| Manager selects either:   * 3.1.3 Search | 3.1.4 If user exists, system displays user (refer to error flow \*.1). |
| -or-   * 3.1.5 Add | 3.1.6 If user information is valid, system adds user (refer to error flow \*.1). |
| -or-   * 3.1.7 Update | 3.1.8 If user information is valid, system updates user (refer to error flow \*.1). |
| -or-   * 3.1.9 Delete | 3.1.10 If deletion of user is successful, user is deleted (refer to error flow \*.1). |

Error Flow \*.1

At any time, invalid user information is entered or a database operation fails.

|  |  |
| --- | --- |
| **Actor Action** | **System Response** |
|  | \*.1 Display error message. |