Phase I Assignments

Phase I - R1M1

Phase I - Requirement Analysis and Modeling

Due Date: November 6, midnight (sharp)
Please review the project documentation. Particularly the part "Weekly Meeting with TAs". Your preparation and performance at these meetings, along with your timely achievement of project milestones will determine your grade in this project. It is very important that you come to these meetings well-prepared. For each meeting, the following will be due. The preliminary or final version of a project deliverable, and, a written meeting agenda.
Requirements: Using the Phase-I project description as a basis, your group needs to prepare the following documents.

1. Functional requirements. (40 pts)
    a. UML Use Case Diagram: All actors, use cases named (10 pts)
    b. Use case narratives for selected use cases: Depending on your design, you should name and select the important use cases. However, you should put enough thought and work into the narratives. **Expected total length of the scenario descriptions in the narratives is at least 1-2 pages in 11pt font, single-spaced, with reasonable margins and indentation!** (30 pts)
    c. The project description does not specify every detail. It is your job to determine to complete if any is missing. If necessary, you will play the role of the product owner for his part.
2. Domain model. **Around 10 domain classes at least.** (15 pts)
3. System sequence diagrams:
   SSD's for selected use cases' main success scenarios and frequently used or complicated alternative scenarios. (20 pts.)
4. Operation contracts for selected operations. (15 pts)
5. Other artifacts that are started during the inception phase: Vision, Supplementary Specification (non-functional requirements), and Glossary. (10 pts)

Please review Chapter 7 of Larman for examplary documents.

NOTE: Submit your meeting agenda before the meeting.

NOTE: Please review Larman Chapter 6 and 7 for uses cases and other requirements.
PHASE I REQUIREMENTS
Your submission should satisfy the following:
1. Your use case diagram should show all use cases for Phase I of the project.
2. At least 10 use case narratives for the most complicated use cases.
3. At least 10 domain classes

4. At least 10 System Sequence Diagrams (SSDs) for the most complicated use cases
5. At least 10 operation contracts for the most complicated use cases.
6. Be creative about other artifacts that are started during the inception phase: Vision, Supplementary Specification (non-functional requirements), Glossary.

SUBMISSION DEADLINE: November 6, 23:59
(This is the final submission deadline. You should prepare these documents before the weekly meetings with your TA. You will receive feedback in the meeting and submit the corrected version on Sunday.)

Phase I - D1

DESIGN I:
Using your requirements document from previous weeks and considering your TA's feedback your group needs to provide the following content:

i. **Logical architecture** (UML Package diagrams).
ii. Interaction Diagrams (at least **10 UML Sequence** and **10 Communication** Diagrams).
iii. UML **Class Diagrams**
iv. Discussion of the application of at least **3 design alternatives** (GRASP/principles/patterns), and the **discussion** of pros and cons of your designs.
v. **Partially running code** demo (by checking out a version from git repository and running it). Your code should be based on your design. Please review Ch18 (Use Case Realization). You will be doing the design by applying GRASP, and utilizing interaction graphs and design class diagrams, and converting some of them into code.
vi. This assignment duration is two weeks. For the first week meeting, we expect at least 2 Sequence, 2 Communication diagrams, and the application of at least 2 design patterns/principles (either in the code or in the interaction diagrams). (Optional:) **A start-up code** with at least one SSD actor-system interaction running.

We will evaluate your design based on **GRASP Creator, Expert, Controller, Low Coupling, and High Cohesion patterns.** We will check if your design follows the **Model-View separation.** During Phase II Design, you will further improve your design using GoF and GRASP.

All submissions will be through KU Blackboard. You will submit your project deliverable (Design 1) in an easy-to-read single pdf file. Your document should have one table of contents. Make sure that the texts of the document and images in general are readable. Nice formatting and creativity matter in these documents.

NOTE 1: All diagrams should be drawn using a diagramming tool. Hand-drawn diagrams can be brought to the meetings for feedback. However, properly drawn diagrams will be graded in the submitted material.
NOTE 2. You are responsible for any new announcements on Design 1 changes. Please follow the assignment announcements.
NOTE 3: If you have any questions regarding the game, first have a look at the project document. If it misses your question or it is ambiguous, then scan the discussion board. Your question may have already been answered. If none of the above answers your question, then ask your question in the discussion board so that everyone could benefit from it. If you have any questions regarding the design document, first look at the lecture notes and the book. If you could not find an answer then ask a question on the discussion board.
NOTE 4: Do not forget to submit weekly agendas/attendance

Phase I Demo

For this assignment, we will check the latest version of your program implemented according to the phase-I rules. We will check the following:

1. Demonstration of logical architecture - layers/packages/subsystems
2. Demonstrating GRASP responsibility assignment patterns, implementation of class/methods **reflecting the interaction diagrams** (not all the methods necessarily implemented, but at least for the use cases/functionalities listed in step 8)
3. Implementation of classes reflecting the class diagrams (all methods not necessarily implemented)
4. Correct implementation of the Controller pattern, and any two of the following: Adapter, Factory, Singleton, Strategy, or Observer. (Note that you must demonstrate all patterns in the second phase).
5. Correct implementation of the Model-View Separation principle
6. Usage of git by the team members for the implementation (every member needs to code and push and/or merge, usage of issues and boards).
7. Timer-based or multithreaded animation (see lecture notes)
8. Demo of the following use cases/functionalities below. Choose 4 of the following:
   - a. Building Mode
   - b. Player
     - i. Moving with arrow keys
     - ii. collisions with walls (cannot pass through the walls)
     - iii. Finding key with left click
   - c. 2 types of Alien (e.g., Shooter Alien, Blind Alien etc..)
   - d. Pause/Resume
   - e. Login/Signup
   - f. 2 types of PowerUps