CS310 Assignment #2 - Design

Deadline: 09/27, Wednesday, 11:59:59pm
Late policy: Late submissions lose 1% of the total available points for each hour the assignment is late. Assignments submitted more than 48 hours after the original deadline will not be accepted.
Submission: All submissions will be via D2L. Each team only needs to submit one PDF file under “My Tools → Assignments → Assignment #2”.
Team size: same team as assignment 1

Assignment Description

In this assignment, you will focus on the design of your system based on the requirements in your Assignment 1. You are required to produce a design document. Your need to design a high-level architecture of your whole system to describe how different components interact with each other. You also need to come up with an implementable detailed design. In other words, a software engineer outside of your team should also be able to implement your system based on your design. You can write explanations of your design (in other words, the rationale behind your design) in natural language if necessary, but your design must follow the UML standard. If you plan to use external frameworks/libraries, please include them in your design as well. Please note that external frameworks/libraries may end up having a non-trivial impact on your design, so you are advised to study and choose them carefully. Your implementation (Assignment 3) will be based on your design, and if your implementation does not follow your design, your grade may be affected later. In other words, if you realize your design is not appropriate to support your implementation, not only will you need to redo a big chunk of the work, but you may also lose points in Assignment 3 because of your design (if the departure is big and deemed unreasonable).

Deliverable

Your design document must have the following sections.
1. Project Title and Authors
   a. Your team name as appeared on D2L
   b. A list of all team members (names and USC ID numbers)
2. Preface
3. Introduction
4. Architectural Design
   A high-level, architectural design using the techniques we discussed in class (patterns, styles). You should include an overall breakdown of the system into the major components (and, connectors, if necessary and appropriate), an explanation of the patterns and/or styles you are using, and the rationale for them.
5. Detailed Design
A refinement of the architecture into an implementable detailed design. You should identify the key building blocks of your architectural elements, their APIs, their attributes, etc. Your detailed design has to have the following.

1. Package Diagram (a package diagram including package names, class names in each package, relationship among packages);
2. Class Diagram (a class diagram including class names, attributes, methods, relationship with other classes, e.g. Generalization);
3. A set of sequence diagrams (no fewer than 10, but as many as you need) describing the key interactions among the objects of the classes in your design.

You must clearly indicate the relationship between your detailed design elements and your architectural design elements (e.g., “this class belongs in this component”).