CS 320
Design Specification

Due: **Tuesday, March 12, 2024, 12:00 PM noon EDT** via Moodle. For this assignment, you must work in your project group. Submit only one assignment per group. You will also give a 10-minute group presentations on Tuesday, March 12, 2024.

Overview

You have already worked to define a system you will deliver by the end of the semester. The purpose of this assignment is to accomplish the detailed architectural design and phased product delivery plan for your system, before you implement your ideas in code. A common name for this document is "System Design Specification" or SDS, although in our case, we are augmenting the design with planning components.

After you complete your SDS, you will present it to your customers (and peers). Your goal will be to convince them that:

- you fully understand what it is that you are building,

- you have a solid idea how to approach building it, and

- you have the resources to do so in the time available.

You will find yourself referring to your SDS throughout your development, as you need to remind yourself of, better understand, and further refine the details the system architecture and plan.

Deliverables

You will submit a .pdf of your SDS and also present, at a team, your design and plan in class.

We expect to see the following components in your SDS (please refer to the template SDS for more details):

1. System Architecture:
   Define, in detail, the system and software components. Carefully and clearly identify the major modules and interfaces between modules required to implement the system. Incorporate the design principles discussed in class. Address the design of the system from the customer's viewpoint, as well as that of the developer and administrator.

   The definition must include at least two views of the system architecture, with one view, a UML class (object) view. You also must include two UML sequence diagrams outlining two of the use cases from your SRS. If you use a database or datastore, outline the high-level schema. **If you plan to use cloud services, and AWS in particular, you must describe how.**

2. Team structure, schedule, task assignments, and risk assessment:
   Describe your team structure (how you have organized the team, what are members' roles and responsibilities), elaborate on milestones (external and internal), define tasks, and specify the team member responsible for each task. This should reflect your actual plan of work, including items your team may have already completed. Utilize tables or diagrams to convey this information effectively.

Identify the top five software development high-risk areas of the project. Analyze why you believe they will not become "show stoppers" for the project, and what your risk mitigation paths would be if they arose.

3. Test and documentation plan:
   Describe what aspects you plan to test and why they are sufficient, as well as how specifically you plan to test those aspects in a disciplined way. Discuss unit test, system test, and usability test strategy, along with specific test suites identified to capture the requirements you described in your SRS. Identify the mechanism you will use to track bugs, and other open issues that occur during use and testing.

   Define the documentation you plan to deliver with the system, e.g., user guides, wikis, admin guides, man pages, help menus.

Your group presentation will be up to 10 minutes long. **The time limit is strict.** Your grade will be based in part on the presentation, so you should make sure you practice the presentation, and get outside feedback (from friends or classmates). The presentation should summarize each of the three elements above (1, 2, and 3).

Remember: You are presenting to the customer! Keep technical jargon to a minimum, and present at a high level. Convince the customer that your project will be a success and that you are aware and ready for the risks, and have a well-laid-out plan. Make sure you start with a brief recap of the product — the product idea presentations were long ago and your product likely changed significantly since then; while you've been working on your product daily, we haven't, so aim your presentation to someone who is not "in-the-know."

You are responsible to make sure whatever equipment you need to present works. For example, if you plan to project slides, make sure to bring a laptop. You can (most likely) verify that it connects to the projector and projects OK in the room you'll be presenting in during after hours or after an earlier class. If you are doing a live demo, make sure what you want will be visible via projector.

Prof. Michael Ernst, at the University of Washington, has written up some helpful advice on giving technical talks. This is a good place to get hints on how to prepare.

Follow the directions included in the template SDS regarding specific points for each category.

Like the SRS, the SDS will be a living document. You will be asked to provide updates to it at periodic points in the development cycle. As part of developing the SDS, you may need to revise your SRS. Keeping these documents up to date with changes as they happen will make it easier to keep your team and customers in sync, and to meet your later deliverables. (You do not need to submit an updated SRS at this time, but you will later, so updating it now will make your job easier later.)