# Exercise Architecture and System Design Process

## CS4320/7320 Software Engineering

In this exercise, you will use a provided requirements analysis to produce an architecture design for the programming assignment submission service.

#### Problem

* Need: A method for easily submitting and collecting programming assignments.
* Purpose: To create a system which allows students in programming classes to submit programming work. Additionally, the TAs must be able to collect assignments. Finally, the instructors need to be capable of managing the course, its sections, TAs, and assignments.
* Client Base: CS Department – faculty, staff, and students

#### Deliverable

* Create a document with a title page, including your group, group member names and the exercise name. Then complete the steps below, presenting the information in an organized fashion. When you are finished, one of you submit a PDF of your document to Canvas. Note the details under Step 4 regarding other document requirements.

**Step 1** - In this exercise, you will create design diagrams like the ones from class. Your first step is to find a software program that you can use to draw these diagrams. You’re welcome to use any program for this assignment. Here are a few suggestions: - [yEd](http://www.yworks.com/products/yed) - Microsoft Visio or Powerpoint - Sketchbook: [sketchbook Links to an external site.](http://www.sketchbook.com/?locale=en) - [Violet UML Editor](http://alexdp.free.fr/violetumleditor/page.php) - [Draw IO](http://www.draw.io/)

**Step 2** - To provide a common base for this assignment, all groups will be working from the same requirements, below. Familiarize yourself as individuals and as a team with these requirements and ask questions in the Discord channel #design to clarify anything that needs clarified.

**Step 3** - In lecture, we covered a few types of Unified Modeling Language (UML) diagrams: - Use Case Diagram - Entity-Relationship Modeling Diagrams - Class Diagrams - Activity Diagrams - Sequence Diagrams - State Machines

**Organizing Your Team** - Your team is responsible for several diagrams. ***Each individual should contribute to three different types of diagram***,through either independent design, design collaboration, or careful peer review of a finished diagram. - Carefully plan responsibilities for design and peer review so each individual works on three different types of diagrams and each of the following is accomplished: - For **one** of the ***activities*** in the Requirements document, create a **Use Case Diagram** and the associated **Use Case Description**. - Take two of the ***Activities*** in the Requirements document create **an activity diagram** to demonstrate the flow of the system. Each individual should contribute to an activity diagram. - For **one** of the ***Activities*** in the Requirements document (a different *Activity*) create a **class diagram** to demonstrate the class(es) and entity relations. - For **each of the other three** types of UML diagrams in thelist above, use it to represent another part of the system. This includes an **Entity-Relationship diagram, a sequence diagram, and a state machine.** - Distribute the work according to the number of people on your team.

| Member 1 | Member 2 | Member 3 | Member 4 |
| --- | --- | --- | --- |
| Activity 1 | Activity 1 | Activity 2 | Activity 2 |
| Use Case | Use Case | ERD | ERD |
| Sequence | Sequence | Sequence | State |

**Step 4** - Compile the diagrams into the group document as described under Deliverable. - Provide a table of contents. - Each diagram should have a title and caption describing what it shows. - Each diagram should indicate who worked on it and in what role. - Your work will be assessed on the completeness, consistency, clarity and notational correctness of your group design and your adherence to the scope of the project. - Your Group Assignment is due in Canvas at 11:59 pm on the due date in the [assignments page](../../references/assignments.md).