CSCI-201: Principles of Software Development

Fall 2021

Final Project Description

(30% of course grade)

Introduction:

Up until this point in the semester, you have worked alone on homework assignments and labs that have had strict guidelines. This project is going to expose you to working in a group on a large project of your own creation from conception to deployment. You will need to utilize many of the topics you have learned throughout the course, as well as some topics from outside the course. Your final project could be a web application, mobile app, or standalone application, but it must use Java as much as possible. In the project you may use outside libraries and packages. This description is intentionally vague so that you can come up with whatever project you want within the minimal restrictions. Some project ideas from current and former CPs when they took cs201 are posted to WEEK 7 on DEN, so that may be a good place to start.

Group Work:

Part of the purpose of this project is to work together in a team of 5-6 people. Groups are formed based on the form you filled out. If you do not make a group, we will assign you randomly. Each group has an assigned mentor with whom to work throughout the project. The mentor purpose is two-fold: a) monitoring the group progress; b) helping you out with any project related issues or questions. The entire team must meet with a mentor. We suggest to have four meetings with your mentor. Please set up meeting times/days as soon as possible. The meeting (either online or in-person) should take no more than 30 minutes, and you will provide your mentor with an update on the status of the project and explain any problems or issues that have arisen. The weekly meetings are graded (up to 3% of the final course grade).

If you struggle to come up with a project idea or want to know if an idea is an appropriate endeavor, feel free to discuss with your mentor.

Much of the work might be able to be accomplished separately, especially with the technologies we have at our disposal for remote work. We recommend at least two hours a week to meet as a group and work out any issues and discuss upcoming tasks.

There will most likely be some issues within the team, and I hope that you all will work out the issues. If you are unable to resolve issues within the group, please let your mentor know. If the problem persists, let the professor know so that a discussion can be mediated among the team members. In extreme cases, groups can be dissolved, or people removed from groups. At that point, the sub-groups at fault will be responsible for the entire application.

Requirements:

You will need to abide by good object-oriented guidelines with your program. Part of your grade will be based on the efficiency of the design and implementation of your code as portrayed in your documentation as well as your code.

With multiple programmers on a team, we suggest that you set up

- Github repository
- version control (CVS, SVN, git, etc.)
- Slack, to communicate with your team and the mentor

Your project must abide by the specifications below, though anything not specified can be implemented however you want.

- The program has user login functionality and a central server to authenticate.
- Users can interact with the software as a guest but experience limited functionality compared to authenticated users.
    - Users must be able to register so they can become an authenticated user. The method by which they register is up to you.
    - When a user registers, the data should be stored in a database on the server.
- The program must have multi-threaded and network functionality. You can include chat, but there must be multi-threaded and networking functionality other than.
- At least the back-end server logic must be written in Java.

You will meet with your assigned mentor during the project to discuss any issues and provide a status update. For each meeting you will need to present documents for each major phase in the software engineering lifecycle.

Meetings:

We suggest four meetings. Here are the deliveries for each meeting:

Week 9 - project proposal

> This proposal should be one-two pages in length and should only provide the concept of the project (an overall description). The specifics of the implementation and other parts of the project will come in future documents.

Week 11 - technical specification

> A technical requirement document defines the functionality, features, and purpose of a project that you're going to build. By writing a technical spec, you are forced to examine a problem before going straight into code, where you may overlook some aspect of the project. When you break down, organize, and time box all the work you'll have to do during the implementation, you get a better view of the scope of the project.

Week 12 - full design

> This should include any difficult algorithms, data structures. the exact GUI, the database schema, the hardware/software requirements, class diagrams, inheritance hierarchies, etc. This will likely be a lengthy document.

Week 14 - testing plan and code

> You will need to prove to us that your program is working the way it is supposed to. That means that you will need to include sufficient test cases to prove that your program is working. This includes all types of testing, including white box testing, black box testing, unit testing, regression testing, etc. Not only should you create a document in this step, but you should also create the test code. You will be able to add other test cases and code throughout the implementation phase, but this will hopefully provide you with a good set of test cases to ensure proper operation of your application.

All documents should be submitted to the mentor as PDFs. You do not need to upload them to DEN, however they are part of the final project upload (see below). For each document presented, the mentor will assign up to 3% toward the final project grade. *If you fail to present the required document during your meeting with the mentor, you automatically get zero points.*

Presentation:

We suggest you prepare a video. You will have to walk us through the project and show us all of the features. The video should be no longer than 10 minutes. Your presentation will be graded based on the grading rubric posted to WEEK 7 on DEN. The total weight is set to 10%.

Submission:

All of the documents shall be submitted as PDFs to DEN. Only one submission person group. Make sure all team members' names are on every document so we can assign points accordingly. You submit the following documents as one single PDF file:

- project proposal
- technical specifications
- detailed design document,
- testing document/code
- deployment document
- video presentation.

Deployment document needs to include step-by-step instructions of what to do to take the code from Eclipse and deploy it. This will most likely consist of some other configurations also (i.e. outside libraries, server settings, Java download/install, etc.)

Additionally, you need to submit the Eclipse project as .zip to DEN. Your source project should be named "CSCI201_FinalProject_groupname". Your group name should be something unique from other groups in the class and meaningful for your project. For example, if your project is Monopoly, your group name could be "monopoly", and you would name your project "CSCI201_FinalProject_monopoly". This will help us for grading in case we need to run your program after submission.

Once you submitted all required files, we will run and grade your project. The weight of this part is set to 8%.