CS 145- Assignment 3

Overview:

For your final assignment of the quarter you get to choose what program you want to create! This isn't a complete free for all- there will be some structure. But I'm okay with you choosing to create any program that sounds fun/interesting to you. You can choose to build off of a lab or assignment you already did if there was one you particularly enjoyed.

Alternatively, if you're over writing code and want to research and create a presentation for the class on a computer science related topic instead, you may do so.

You will write up a proposal and do a progress check-in on your assignment with me. Doing *both* of these activities is mandatory to receive any credit on the assignment.

This is my first time giving an open ended assignment like this so it will be a learning experience for all of us. I reserve the right to modify the spec/expectations as we go if needed.

Details- Coding Option:

Write a program of your choosing that incorporates **at least two** different major topics that we have covered in class. These topics include:

- Classes and Objects
- Inheritance and Polymorphism
- Interfaces
- Arrays and ArrayLists
- LinkedLists
- Sets and Maps
- Stacks and Queues
- Recursion
- Binary Trees

You can come up with something entirely on your own or build off of one of the labs or assignments. Your program is expected to be at least similar length/complexity to earlier labs and assignments. If you need help coming up with ideas, you can check out Stanford's nifty assignments webpage and see assignments given by professors across the country. When looking at that webpage, know that CS0 is generally for non-majors, CS1 is roughly equivalent to WCC's CS& 141, and CS2 is roughly equivalent to WCC's CS 145. This means that CS0 and CS1 (or even CS2) assignments might not meet the two major topics from this course requirement. If one of the nifty assignments interests you, you don't need to do it exactly as defined in the spec- this is just for getting ideas. If you get the idea for your program from a nifty assignment or other webpage, tell me so and link that page in your proposal. You are free to use libraries/concepts we haven't covered in class but must run

them by me in the proposal and show me that you have a basic understanding of how to use them during the check-in.

It is easy to get excited and think that you're going to make some big, complex game or something. Be realistic with yourself! I suggest you start small and can add complexity/functionality if you're really getting into it. Think about the complexity of the labs and assignments throughout the quarter and aim for something similar.

Chances are, this is your first opportunity to really come up with your own program idea and try to implement it. Just like we do with the labs and assignments, break it down! Start with a subproblem of the bigger thing you're trying to do and get that working before writing tons of complex, messy code that is hard to debug.

Details- Presentation Option:

If you want to do a 20+ minute presentation instead of a writing another program you are welcome to do so! This presentation must be on a Computer Science related topic. That could really mean anything- a data structure we haven't covered yet, a deep dive into using git, a comparison of different programming languages, a significant person or other topic in computer science history, whatever interests you as long as it's CS related. Your topic choice must require you to do some research (i.e. you can't cover something we already covered in class). Your presentation must take at least 20 minutes and have some sort of visual aid. Your visual aid could be PowerPoint/Google slides, a Prezi, typing code on an IDE, drawing on the whiteboard, or anything you like as long as the audience has something that helps illuminate the topic that they can look at for a majority of the presentation.

You will give this presentation during normal class time in the last week or two of the quarter. Exact scheduling to be determined based on how many people choose this option.

Proposal:

You will write up a short (~1-2 paragraphs) proposal and submit it to me for approval/discussion. The due date for this is one week before the assignment itself is due. **Completing a proposal and getting approval from me on your idea is <u>mandatory</u> to receive *any* credit for Assignment 3.**

If you choose the coding option, your proposal must specify which two (or more) major topics from the course you will incorporate into your program. If you expect to use any libraries/APIs/concepts not covered in class, you must tell me in your proposal. Chances are I'm fine with you using anything but I might steer you away from trying to learn a new 3D game engine for instance. Be specific about the exact type of functionality your final program will have. This can change as needed but will form the basis of how I grade your program.

If you choose the presentation option, your proposal must tell me what specific topic you will research and present on. You should tell me what your baseline knowledge about the

specific topic you've chosen is and specify to what level of detail/understanding you will research the topic to. You must also tell me what type of visual aid you plan on using (this can change if needed as you start researching and creating your presentation).

Check-in:

For ~5 minutes in class (Zoom arrangements can be made if needed) on either Thursday, March 7th or Tuesday, March 12th (on Monday the 11th, I will be in California for a wedding so no check-ins that day) we will sit down together and look at how your assignment is coming along. You must have something to show me. This check-in will 1) be an opportunity for me to see your progress (and a forcing function for you to have some progress by the time we meet) and 2) give us a chance to agree on the expectations of what you must complete in order to be eligible for full credit.

This check-in is mandatory. No check-in means you cannot receive any credit for assignment 3. If scheduling is an issue, communicate with me via Canvas messenger and we can find a time to meet on Zoom outside of class hours.

If you choose the coding option, what you show me will be the start of your program (including basic understanding of any extra libraries/concepts you are using from outside of this course). This must at the very least be pre-lab level equivalent with some method signatures, comments, and pseudo code.

If you choose the presentation option, you must show me what research you have done so far and the start of your visual aid you will use during your presentation.

Grading:

Since everyone is doing different projects, there is no uniform rubric. This is why we are doing the project proposal and check-in. Via the proposal and check-in we will agree on what functionality/research & visual aid you need to complete in order to be eligible for full credit. I will do my best to help each of you set reasonable expectations but sometimes things are harder (or easier) than expected so if those expectations need to be adjusted please communicate with me.

If you choose the coding option, insufficient/missing comments and poor coding style deductions will still be made as has been happening throughout the quarter. I strongly recommend you go back through all your CodePost submissions and re-read the grading comments. I will be harsher than I have been throughout the quarter with points deductions if I have already told you/your lab group that something is missing/bad practice/etc. This is your final assignment for the quarter and I expect a higher level of polish than earlier assignments. We have completed most of the lecture topics for the quarter already (so that you could have the knowledge before having to write labs/assignments using said knowledge) so there will be a good bit of class time in the coming weeks to work on

Assignment 3. As always, if I have reason to believe you turned in someone else's code as your own (including A.I. generated code) you risk a zero on the assignment and possible reporting to the college for academic dishonesty.

If you choose the presentation option, the quality of your presentation visuals and performance giving the presentation will be factored into your grade. This isn't a communications class so I don't expect perfect posture/annunciation/projection/etc. However, this is a college class, I expect you to know what goes into a good presentation and being a good presenter by now and will grade as such.

There will be no extra credit available on this assignment (unless you choose the coding option and *unequivocally* go above and beyond what would be expected for a CS 145 student) because everyone is doing different things.

As stated above, completion of a proposal and check-in is mandatory to receive any credit for this assignment.

Submission:

If you choose the coding option, you will submit your code to CodePost. If you choose the presentation option, you will submit any visual aids to Canvas. This assignment is to be done individually. I am fine if you give/receive help from your classmates (lab mates or otherwise) as each person is doing a different project. But, of course, no direct copying and pasting of other's code and claiming it as your own.