COMP 290 Final Project

Final Project Overview

Congratulations, we are getting close to the end of the semester! In lieu of a final exam, the final deliverable for COMP 290 will be a final project. For this project, you will develop an action plan for creating an **extracurricular software engineering side project** of your choice! By the end of the project, you will learn about how to develop software project ideas, research new technologies, read documentation, and develop a timeline to make meaningful progress on such ideas. You will also have developed a full plan to work on a real-world project that showcases the software engineering skills you will develop during your time as a Computer Science major here at UNC, which you can put on your GitHub profile, resume and personal portfolio. While working on this final project, you will also make tangible progress to *learning the programming language and / or tools* ***of your choice*** that will help you progress towards your goals.

The grade for this project will consist of numerous sections with different weights, as defined below. Each section will have incremental deadlines, which will be specified on the course website. The final project will make up 30% of your final course grade. There will also be a final presentation showcasing your ideas, which will take place **IN-PERSON** in concordance with the UNC Final Exam schedule on **Friday, December 6th at 8:00AM in FB009**.

Project Proposal (30%)

The first deliverable for the final project is the **project proposal**. This proposal will help you get started conceptualizing the project you wish to work on. The proposal should include:

1. **Project Outline (20%)**: In the project outline, you will specify details about the type of application that you will develop. Your project outline should answer the following questions:

    - *What type of project will you work on? Will it be a web app, mobile app, or something else? What will your project do?*
      (Answer with a minimum of 200 words)

    - *Why did you choose to work on this project? What motivates you to choose this topic?*
      (Answer with a minimum of 100 words)

    - *Who is the target audience of this app? Be specific about the demographic (age / occupation), the type of devices they might use (computer, Apple phone, smartwatch, etc).*
      (Answer with a minimum of 200 words)

- *What problem does your project hope to tackle? How will your final product help to solve this problem? How will the target audience you specified above benefit from your app?* ***(Answer with a minimum of 200 words)***

- *Identify the programming language(s) you will need to learn in order to work on this project. Provide a link to the official documentation for this programming language. Also, please provide 3 free, easy-to-access resources that you can use to learn this programming language.*

- *Identify the tools, frameworks, etc. you might need to learn in order to work on this project. Please provide a link to each.*

2. **Wireframe Sketch (10% + 5% potential bonus)**: Include a sketch of how you might imagine your final project to look like. This can either be a pencil sketch or a wireframe created with a more sophisticated software such as Figma. Using Figma is not required, but we highly recommend it if you have time! ***Students who submit a nice Figma sketch will receive extra credit on this portion of the assignment!*** If you are using Figma, there are many official design resources that can help you begin to design your project, especially if you are planning on developing a mobile application. Here are a few resources:

    - **Apple Design Guidelines Official Figma Template**: Link here. Use this template if you plan to design an iOS application! *Explore all of Apple's design resources here.*

    - **Google Material Design Official Figma Template**: Link here. Use this template if you plan to design an Android application! *Explore the Material 3 design ecosystem here.*

Getting Started Tutorial (30%)

One of our main objectives for this project was to ensure that students have the chance to actually get started learning the programming languages and tools needed to get started on the project you have designed! Of course, given the large variety of programming languages and tools, you may not have the chance to learn these things in the traditional CS curriculum. Self-learning and teaching is one of the most valuable skills for software engineers, as it is something you will need to do throughout your entire future careers. When getting started in the real world, you will often have to complete a real "getting started" tutorial for the programming language or tool you want to learn. This section of the project will give you the time to complete such a tutorial for the type of project you want to create! If you have the chance to begin learning now, the chance that you make meaningful progress on these projects after this semester increases significantly. We also hope that you have fun, since you get to dive into a tool of your choice!

Now that you have identified the programming languages and tools you need to learn to complete your projects in the section above, to receive credit for this section, you will need to

complete an Official Getting Started tutorial made for the language you need to learn. There are so many resources online that things can become overwhelming, so do not worry. Depending on the different project proposals you selected in the project proposal, choose the appropriate "concentration" below and complete the items listed inside of them! You will have until LDOC to complete this, so take your time, and have fun!

IMPORTANT: If you chose a project that is more niche / is not adequately represented in the tracks below, OR if you already have some experience in the track you chose, please reach out to either Ajay or Noah AS SOON AS POSSIBLE so we can develop a personalized track for you!

Track	Tutorials
iOS Development Track (for iOS / iPadOS / macOS apps) *Note: This track requires access to a Mac computer.*	**Official Develop in Swift Tutorial Series (here)** Created by Apple Complete the the following chapters: ● Explore Xcode ● Views, Structures, and Properties ● Layout and Style ● Buttons and State ● Lists and Text Fields **To Submit**: GitHub repository containing your complete code after following these tutorials.
Android Development Track (for Android and ChromeOS apps)	**Your First Android App Tutorial Series (here)** Created by Google Complete the following pathways: ● Introduction to Kotlin ● Set up Android Studio ● Building a Basic Layout **To Submit**: GitHub repository containing your complete code after following these tutorials.
Web Development Track (for developing web apps)	**TypeHero Tutorial (here)** Created by community contributors on GitHub Complete the following: ● TypeScript Foundations ~~**React Basics (here)**~~ ~~Created by Meta~~

	~~Complete the following modules:~~ ~~● React Components~~ ~~● Data and State~~ **[NEW] Free React Tutorial (here)** From Codecademy Complete the following modules: ● JSX ● React Components ● Components Interacting ● Hooks **To Submit**: GitHub repository containing your complete code after following these tutorials.
AI App Development Track (for developing AI-powered apps)	**Generative AI for Software Dev (here)** Created by DeepLearning.ai This course is broken into three courses. Complete *Course 1: Introduction to Generative AI for Software Development*. **To Submit**: GitHub repository containing your complete code after following these tutorials.
Video Game Development Track (for developing desktop video games) *Note: For developing mobile games, we recommend checking out either the iOS Development or Android Development tracks.*	**Unity Essentials Series (here)** Created by Unity Learn Complete the following modules: ● Editor Essentials ● 3D Essentials ● Audio Essentials ● Programming Essentials **To Submit**: GitHub repository containing your complete code after following these tutorials.

Action Plan (25%)

The last major deliverable for the final project is the creation of a **6 month action plan** for your project! This plan should be realistic to help you reach your goals of completing this project. You do not need to factor in completing the entire project within the next 6 months, but should outline a meaningful amount of progress. The goal is to create a real action plan that you will be able to

follow as you enter Winter Break and next semester, enabling you to gain experience and build up your skills! Your action plan should include:

1. **Monthly Schedule**: *For each* three week period after finals, please include the following:
    - **Goal**: What would you like to accomplish in this three week period? This can either be learning a new skill or working on your project. Include three bullet points in this section, each should be ~2-3 sentences.
    - **Tasks**: Write a checklist of tasks to complete. When you are following this plan, you should use these tasks to drive your progress and stay focused! To accomplish this, your tasks should be clear, granular, and not overloaded. Try to include ~4 tasks in this section, adjusting more or less as needed based on the goal for this three week period. Note, if you are consistently including only 1-2 tasks per period, you are likely not being clear and granular enough.
    - **Extra Resources**: Try to include 1-2 extra resources in this section that can help you complete your task. You may just paste a link for each here.

    In total, your plan should contain 6 sections, each with the *Goal (3 bullet points each)*, *Tasks*, and *Extra Resources* sections completed.

Presentation (15%)

In lieu of a final exam, COMP 290 will have final project presentations! You will not be presenting to the class - rather, we will split the class into three groups. Each group will present to the other two groups near their desks to their class. You will be required to discuss:

- Your project idea.
- The work you completed during the Getting Started tutorial.
- What your action plan looks like.
- What you learned throughout this experience.

Do not stress! If you put a good-faith effort into your presentations, you will receive full credit.

Working with a Partner

If you are interested in working with a partner, you are welcome to. Groups will be limited to at most two people. In this case, the assignment would have the following modifications:

- The required word counts for the **Project Outline** section and # of required bullet points will be multiplied by 1.5.
- Both partners must complete and submit their own **Getting Started** tutorial. If you choose to upload to GitHub, separate the completed submissions in different folders. You may collaborate with each other, but the submissions should be your own!
- Each month of the **Action Plan** should include one extra goal (5 total) and at least one more task.