

Individual Capstone Assessment

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My team's senior design project will allow me to show all that I've learned during my years as a student at the University of Cincinnati. It will be an endeavor that will show what my group and I are individually capable of with little guidance from a professor. In order to be successful in this project, I will have to use almost everything I have learned in my classes and in my co-op terms to create something meaningful. It will also show my ability to cooperate and communicate with my small team. We will all have to go through every phase of a software project, from ensuring we all share the same vision to everyone executing their share of the work excellently. Finally, it will be an experience that I can share proudly with future employers.

The first class that comes to mind as crucial in my education and in this project is CS2028C: Data Structures. In this class, I worked with a group of four (the same size as my capstone project group) to build software, building soft skills I will continue to exercise throughout this project. I also learned many of the most important technical skills necessary in any development environment from that class. Seeing as much of our project will likely be written in python, CS2021: Python Programming is vital to mention, as it was my first foray into python and taught me intermediate programming skills even before Data Structures. Probably the most important class from a soft-skill perspective was EECE3093C: Software Engineering. There, I learned the basics of building software projects and how to pace myself and manage my work to ensure that I meet deliverable deadlines. As an ACCEND student, I have also begun ENGR6014: Engineering Project Management this semester, which has also already taught me project management skills I will use in this project as the team's Project Manager. Finally, CS4071: Design and Analysis of Algorithms will be vital if I am ever working on the more technical side of the project, and specifically if I get into optimizing our code. Many classes will come together summatively to give me enough experience to execute in this project comfortably and at a high level.

In both of my two co-op experiences, I was a Software Engineering Co-op at BlueHalo, a defense contractor in Fairborn, OH. There, I learned the importance of independent integrity. I was trusted each day to do a solid amount of work and to operate safely in the classified area of the office. This skill will help me drive the project forward and ensure that I put forth at least my fair share of work towards the project. I also gained technical experience working in a small

team using techniques that will apply to the project, such as version control, virtual machines, CMake, and more. Finally, and perhaps most importantly, I performed a large amount of my work at BlueHalo within the C++ Qt framework. In my capstone, I will be responsible for the PyQt portion of the project, which I anticipate being very similar to the C++ Qt technology I am familiar with.

My motivation for this project is twofold. Firstly, it is a marching band software, and I have had a love for the arts and participated in band for nearly a decade now. Perhaps more relevantly, however, it will allow me to show my stuff and to develop a software project independently of superior managers or team leaders, and to make vital software decisions. Our preliminary approach to designing a solution has involved identifying a problem and dreaming up an ideal solution to that problem, then working through the technical details on how we can make that solution happen from there. We will likely hold a brainstorming session where we mind-map and prioritize the most important parts of our project before assigning them to each team member. From there, other preliminary work will include scheduling our work and perhaps creating visual mockups of the tool.

I anticipate creating a product that can be useful for band directors and other drillwriters at a professional level. The number of features we design to that level will depend on the time we commit to the project, but the quality of the work is very important to me. I will feel that the project is successful if I can confidently say that our software is useful to someone who already uses industry-standard drill writing software. Perhaps another way I can evaluate my performance is to look back retrospectively at the end of the year and feel whether I have gained tangible experience as a software engineer by improving my technical and non-technical skills. At an individual level, it will be important to me that I am on top of my portion of the project and that my group is not dragging its feet because of me, and that my personal code is well-written in every sense of the word. This way, I will have a solid amount of work I can proudly present to a future employer. In summary, this assignment is a chance to show all that I have learned to future employers, and to put something truly useful and creative out into the world.