My team's project is building a web application that can be used to teach a viewer about cybersecurity concepts. We chose to pursue this idea because it was a viable intersection between our various experiences and interests. My group members – Emily, Robin, and Molly – and I are all computer science majors, so our academic perspectives are quite similar. However, as a group, we have a reasonable experience with cybersecurity. We decided that both this and web development are areas of computer science that we did not get the chance to explore more than the surface level of in our undergraduate curriculum, so we could greatly benefit from allowing ourselves the opportunity to do so for our senior design project. Designing a web application that teaches cybersecurity seemed like a strong convergence of these ideas.

My college curriculum has given me extensive foundational experience in software development. Software Engineering (EECE 3093C) and Design and Analysis of Algorithms (CS 4071) in spring 2022, as well as Programming Languages (CS 3003) in summer 2021, most shaped my academic perspective of software engineering by providing education on the customs and fundamental workings of the field. The class that gave the most relevant knowledge to web development specifically was Computer Networks (CS 4065), which I took in Fall 2022, as I did some work with transfer protocols such as TCP and HTTP, as well as a bit with HTML. I plan to reference some of this work as we tackle our project. This class also provided some insight into cybersecurity, which should prove useful as well. Information Security and Assurance (IT 2030C) in spring 2020 also gave some background on cybersecurity, though as I recall it was light and mostly focused on IT.

As far as my co-ops go, I acquired much broader and more solid experience across my positions. I worked my first three co-op rotations (and part-time during the semesters in between) as an IT co-op at THP Limited, a structural engineering firm in Cincinnati. My time there was split between the service side of IT and the cybersecurity side, though it gave me significant exposure to cybersecurity in practice. I worked with cloud computing software and hardware and their firewalls, group policies, and more. Ultimately, I decided that while I enjoyed some aspects of cybersecurity and related subjects, I didn't want my career to focus primarily on it. My next co-op was at Siemens Digital Industries Software outside of Cincinnati as a software development co-op, where I worked largely in white-box software testing for the Teamcenter code library. This gave me experience with working internally in a larger code base, which has helped me think more wholistically in various projects since, as it will for my senior design. My last co-op was as a software engineer at Northrop Grumman in Rolling Meadows, Illinois. Here, I also worked in software testing using Python modules for a hardware simulator's Java library, as well as writing classes in it. This further expanded on my experience with large code bases from Siemens, and I became much more familiar with GitHub version control and the Agile/Scrum methodologies. After my last co-op, I feel readily prepared for the long-term team project that is my senior design.

As touched upon at the beginning, this project concept was born primarily out of my team's and my desires to delve into and solidify our skills with areas of computer science that were somewhat tangential to our classes. For myself specifically, this was largely the realms of web and front-end development. I had a slight bit of experience with web development from Computer Networks (CS 4065), and my only front-end experience is some brief explorations with Python's Tkinter module on a personal project. However, I have always been interested in both web and front-end development for the design aspects and capacity for "creative" and "artistic" thinking, so I am eager to dive into these aspects of the project. Additionally, most of my cybersecurity experience is from "on the job" of my first

co-op position. Considering that, I believe it will be beneficial for me to review the concepts I became familiar with through a more academic lens to help me become more consciously familiar rather than simply intuitively.

My preliminary approach to our project will be to establish the basis of our expectations and how much we want to cover. Specifically, how much education of cybersecurity concepts we want to include in our application. To create our “module,” so to speak, so we have a defined amount of knowledge that we will be able to judge our progress based upon. We will aim to do this by consulting our group’s primary cybersecurity expert and our advisor. We will also need to come up with a concept board for our web application, for the “format” of our educational platform, to visualize in our heads the type of UX we want to design. Having a complete “module” on our website will be a sign of our group’s success. To measure my own personal success, I will judge if I have learned our cybersecurity content fully and designed a full webpage myself using my newly accumulated knowledge. These are the fields I want to strengthen my abilities with, so performing these feats over the course of the project will be proof that I have achieved this.