Our project is to create an application that public-school systems can use to schedule bus routes. This application will store a list of points customized by the school system that each correspond to the address of a bus starting point (one starting point for bus) or a bus stop. These points will be customized by the school system. Once the points are in the system, the system will use search algorithms to determine the most efficient route for each bus. Also, our group plans to implement functionality to recalculate routes by adding or subtracting starting points or bus stops. This will allow the application to be flexible if a driver is absent or a bus is experiencing a mechanical failure.

This application will use search algorithms to determine optimal bus routes so our group will explore the use of algorithms such as BFS, DFS, and A\*. Also, we will need to use data structures such as trees. These techniques were learned in courses such as Data Structures (CS 2028C) and Design and Analysis of Algorithms (CS 4071). Additionally, this application will require storing, modifying, and retrieving data. Techniques learned in Database Design and Development (CS 4092) will help our team accomplish this. This application will also require software development practices learned in Software Engineering such as Git source control.

I do not have a lot of experience with front-end design or implementing search algorithms in applications. Therefore, working productively on this project will require quickly learning and becoming proficient in new technologies. While working at Marathon Petroleum as a Developer and a Business Analyst, I frequently worked on projects that required the use of tools that I had zero experience working with before I started working on the project. This required self-guided training and translating experience gained from working with similar tools in the past. At Marathon, I worked in four different groups under two different roles and I learned new tools in each position, so I have become very versatile and adaptable in my co-op experience. My versatility and adaptability will help me to quickly become productive in this project.

As previously mentioned, my co-op experience focused more on becoming productive in a variety of tools and soft skills than developing in depth technical knowledge. I also have limited experience with skills that are essential for most modern developers such as front-end development. I am excited for this project because it will challenge me in both of those of areas and make me a more rounded developer. I am also excited for this project because it will help me apply large portions of our curriculum. The UC CS curriculum has a significant focus on search algorithms and our application will use these algorithms extensively. It will also be interesting to incorporate different elements from different courses such as using databases to store and retrieve points and then using search algorithms to build a path with the points.

Our group’s end goal is to create a working application that builds logical routes based on stored points. The success of this project will be divided into two criteria: functionality and usability. Functionality will be judged by comparing the routes derived from the app to expected routes. Usability will be judged by getting feedback from someone not working on the project. The start of this process will involve researching technology and techniques for creating this application and consulting with our advisor. After this preliminary research, we will create a list of action items and then assign these action items to members of the team based on interest and capabilities.