1) Overall the project was similar to the original proposal is essentially a way for students to increase their graduation rate for ECE majors and plan out their 4 years at UIUC. This idea is essentially similar to our final project because of how these features were implemented where it essentially helps incoming freshmen in ECE plan out their academic schedules with the main feature that we implemented being the “Recommend Courses” feature that showcases the recommended courses to take specifically using metrics like high GPA and low difficulty level. But we still have something not achieved, as collecting comments for the professors or courses is a big work. If we want to further improve our system, it is possible to add it.The information that we put in our project proposal and decided to use includes Wade Fagen’s GPA data, Rate My Professor, r/UIUC, and Course Explorer.
2) Our application is very useful for all students and counselors at UIUC. We originally created this application for ECE freshmen to help them plan out their 4 years of college. As we started creating the application we realized this tool can be useful for all students in ECE. This is a tool you can always refer back to regardless of what year you are in. This application also helps counselors suggest classes to students. Before this application, students and counselors had to go to many different websites to find information about a class such as reddit, rate my professor and more. This application combines all of that information into one.
3) The source of our information is similar to what we had in our project proposal plan specifically how we have the data coming from Reddit, Waf GPA data, and Rate My Professors to determine the difficulty level and classes. The reason why we needed the difficulty level and classes are so that we can have our recommended course list provide the various classes to take through optimizing the difficulty level and GPA. Furthermore, the schema was also similar to what we specifically had for our database and ended up being a great blueprint for talking about the different implementations like advanced queries and adding indexes to the course to help build the database.
4) After meeting with our TA after stage 2, we had to make some modifications to our ER diagram. Originally, our ER diagram had 5 tables that were independent, we did not create relation tables. We had to add foreign keys to some of the tables to accurately reflect the relationship we defined in our diagram. To fix this issue we added professor ID into our courses table as a foreign key.
5) The functionalities in our original proposal were primarily having the most optimal classes to be taken and professors however we have added more features in the final project. These features that we added on top of what we have in our project proposal are searching from all the users, updating the user, searching through the course department, and deleting a user. Because of how our project proposal was originally supposed to primarily serve as an ECE roadmap we have included other departmental classes as well plus a rating system that will allow users to update the ratings of a Professor. Then of course there is the original feature of the recommended list which is useful for figuring out what classes to take for ECE students to help them graduate.
6) The advanced database programs that we utilized are the stored procedures and trigger and the reason why they complimented our application is because of how these features make it such that the website is more useful for the students to allow them to choose

better courses which is useful for storing the recommendation of the courses taken. Another reason why the advanced database program is useful is because of how it implements an improved rating system for the Professors complimenting the original idea of having it such that it would just show the course map of recommended courses taken.

7) Zachary: The main technical challenge that I believe we encountered is essentially in Stage 2 when initially designing the conceptual design for the database and the reasoning behind this is because of how initially we were unsure because of how initially we believed that through we were doing it correctly with the relationship in the ER diagram however through reviewing it and working with our TA we were able to successfully get the ER diagram and schema working but this was one of the greatest challenges we faced as we believed we implemented it correctly at first.
   Yang: I would suggest that it is very hard to collect all of the real data (although it is really beneficial for the users to do so) from many different databases. It would be time consuming and not accurate sometimes. So it might be helpful to randomize some close and realistic data when necessary. (I also want to point out that don't forget to close your GCP instances when not using, it really costs money if you don't pay attention to it.)
   Xinzhuo: One of the technical challenges we faced is how to use GCP, the instructions provided by the professor are quite helpful. We have learnt almost everything from it. But some of the details like how to use the vim-like system to write are quite confusing. In fact, we do not need to know everything about how to use it in GCP, I believe this part is quite helpful for the future study even though it is challenging sometimes.
   Srishti: I would like to point out that it is kind of hard to build the interface to the fore-end design and write html or other fore-end codes. We first built a website but did not know how to connect it. So, I suggest following the instructions in class if you did not have the basics of fore-end coding, it would be quite helpful.
8) We did not have many changes from our original application to our final product. As mentioned in number 3, we used data from Waf GPA, reddit, and rate my professor. This was also part of our original design. We made some minor changes in our ER diagram but other than that our final product was almost exactly the same as what we started in our first proposal. There are only some of the functions we did not realize as the barrier to collect lots of comments and insert into the database, so we did not add that function.
9) In the future, I believe that the application can be further improved by it having roadmaps to more than just ECE classes, however, we believe that ECE students do need it the most as Computer Engineering has one of the lowest graduation rates of 58% over 4 years (reported on myillini) so we definitely believe our application has plenty of usefulness in recommending classes to these students but there are also plenty of hard majors out there as well that we could extend our program to help out. We can extend the database and create websites targeting to students or advisors in different majors. Another feature that we could implement is to add classes because of how there may be classes that just launched and we wouldn't have it included in our help-me-graduate website. Lastly, one key feature that we would to implement is an add Professor method which would be useful for adding a Professor that didn't previously teach the class, as personal experience has taught us that a new Professor can change up the entire

grading system of the class. We may also collect some subjective comments which I believe is also helpful for the students to reference.

10) The division of labor did not change from our original proposal. Xinzhuo Li was our group leader and made sure we finished our checkpoint in time. He also implemented the insert function and dealt with data. Srishti Modgil implemented the update function and was the UI designer of the project. Yang Chen implemented the delete function and also did the connection of the database and website for the project. Zachary George implemented the search function and collected the data and made the data lists for the project. The advanced database was designed and built by Yang Chen and Xinzhuo Li jointly, the report was done by Zachary George and Srishti Modgil jointly. Overall, we collaborated very well and distributed the work evenly.