CS 3240 Project: Web Application Assignment and Note Organizer

A Technical Report submitted to the Department of Computer Science

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CS 3240 is the Advanced Software Development Techniques course at UVA. The course tends to analyze modern software engineering practice for multi-person projects. For most of the semester, students would work on this final project. Out of the provided options, our group chose to develop a web application that helps to organizes one's class notes and calendar events. Since assignment organizing is crucial for most of the students having higher education, our team believed that it would be helpful for students to use this web application during their time in school and in the future.

At the beginning of the project, each member of the team is assigned a team role. Team roles include Scrum Master, Requirements Manager, Testing Manager, DevOps Manager, and UX designer. Members are then required to complete their individual assignments along with the project's assignments. The Scrum Master helps keeping the team members on track, and monitors the team status. The requirements manager is responsible for the requirements elicitation process and keeps track of the product's status by checking if the product satisfies the requirements. Testing Manager is responsible for ensuring that the system is thoroughly tested with a testing plan and beta testing. DevOps Manager is responsible for the management and support of all the systems that are used in class, including GitHub and Heroku. UX Designer is responsible for the design of graphical user interface.

After setting up the GitHub, we worked on the requirements elicitation process. We produced a survey and several interview questions to gather information on what people would expect with such application. This was crucial since we wanted to have a product that the users would like to use. Most of the team members sent the survey to other UVA students, which allowed our data to have diverse demographic background (see Figure 1). In addition, the survey contained questions about user's experience with similar web applications or alternative ways of

achieving the same goal (see Figure 2). After conducting the interviews and getting the results

for the survey, we communicated via Discord to elicit partial requirements. This process allowed

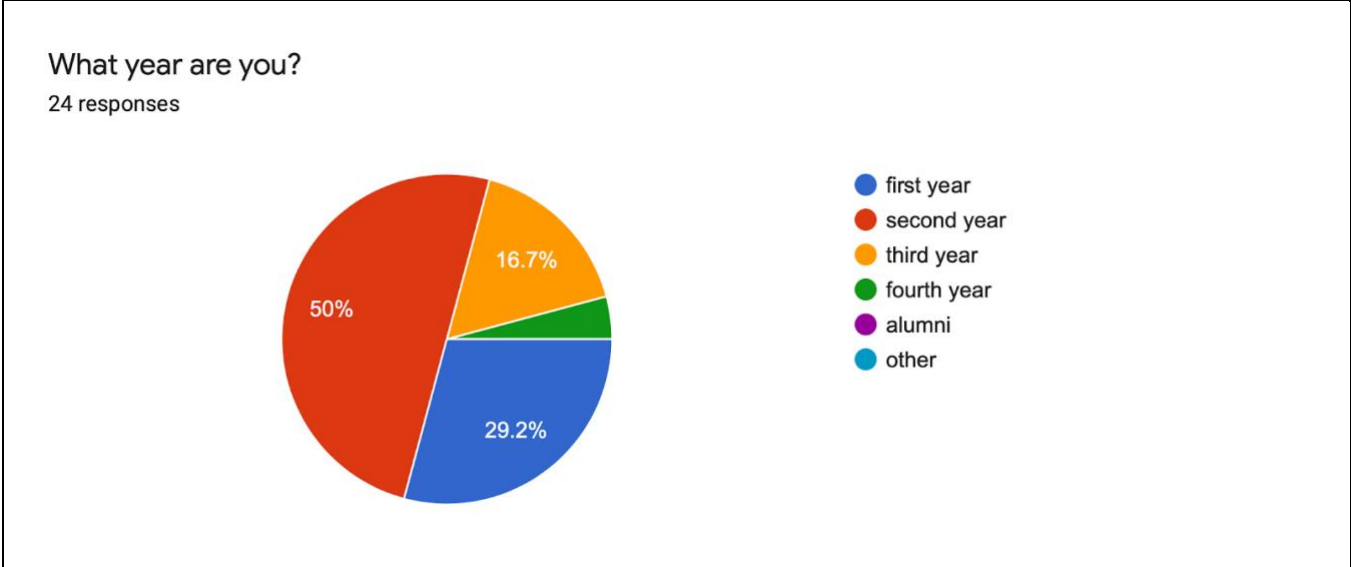us to have a general idea of the features the application would contain.

Figure 1. Example of demographic question from the requirements elicitation survey
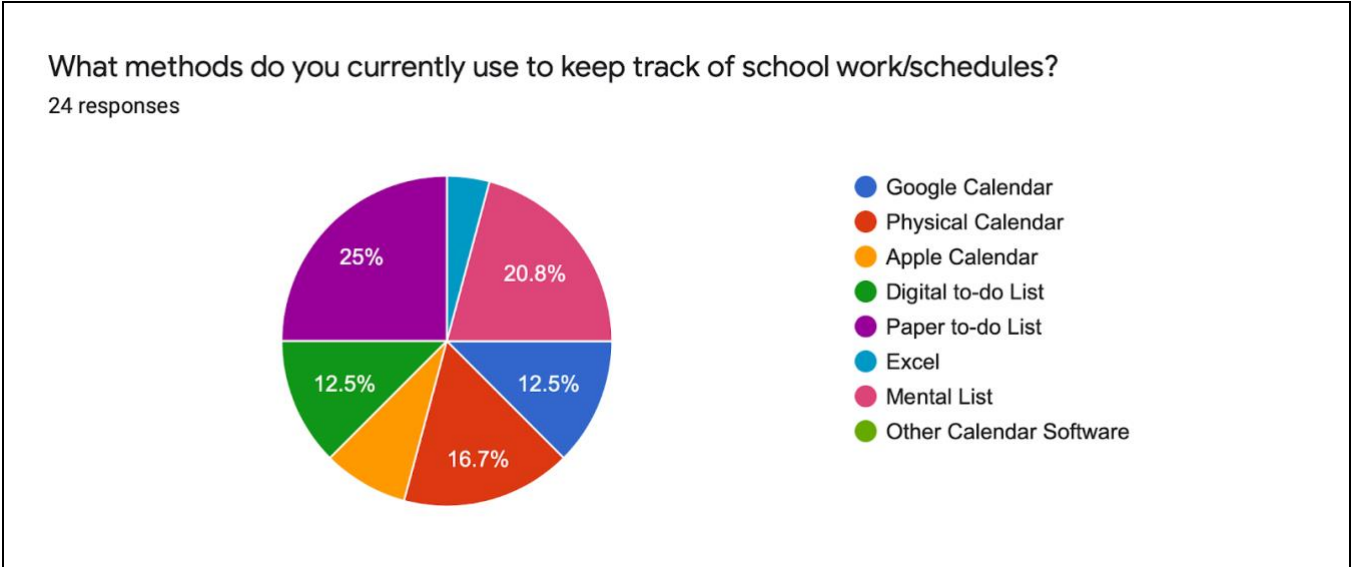

Figure 2. Example of question about user's experience with alternative ways of achieving the

same goal

In addition, the project needed to meet other specified requirements. That includes having the user login to the system using Google login, join classes with other students in the system, and upload PDFs of notes that are associated with each class. The above features allowed our web application to be more useful and powerful to help students organize their work.

As mentioned above, we used GitHub, Django, Python, and Heroku to complete most parts of the project. GitHub allowed team members to have a shared repository that contained the main project. Members then cloned the code to work on the project themselves. The python code was added to a set of files created with Django which is a framework for developing web applications. After every addition of a little code, we would integrate our codes into GitHub and test it. This step specifically required team communication. After we had the required files, we then deployed that repository through Heroku to get a working application. Considering the structure of this project, I discussed my findings at each step with team members to ensure that we are all on the same page.

However, the most challenging part of the project was the communication between the team members. Since every member has different schedule than the others, we were unable to have a meeting with all of the team members besides the required sprint meetings. This caused most of our conversations to be happening via Discord messages. It was not as efficient since members would happen to work on the same part of the application, which revealed the lack of communication between the members. Near the end of the project, most of the members realized this issue, and did the best effort to meet online together to solve any issue we might have. The most challenging issue we had was the Google API implementation. Even at the end of the project, we couldn't solve the issue of the application showing one of the team member's Google

Calendar events instead of the logged in user's events. Therefore, the team decided to give up on that one feature and finished the project with everything else.

Finally, the beta version of the application was distributed to other students to test the system. We were able to adjust some of the details of the application based on the user's feedback. The team was able to solve most of the issues discovered during the beta testing.

In conclusion, this project required team effort. Without any team member, this project would not happen. It also revealed the strengths and weaknesses of developing a web application as a team. Overall, communication was the key to every problem we faced. It was also the reason why every team member enjoyed the process of developing this web application and were all satisfied with the final product.