SOFTENG 350 ASSIGNMENT 3

UOA Drive

BY GROUP 12

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Part 1 High Fidelity Prototype

Part 1.1 User needs

“Intelligence need”: Need for convenience about the preparation stage.

In general, when a group work assignment is published on Canvas, students create folders and share them with their group members. Students take three steps in this process. Firstly, check whether the assignment is released at Canvas. Secondly, create a Google drive folder for it. Thirdly, find the teammates’ email addresses, and share the folder with them. For step three, as only group members’ names are provided on Canvas, students have to look for their partners manually. As a result, students spend plenty of time on the preparation stage. Time is valuable, so it would be better if the preparatory work is done automatically.

To satisfy this user need, an intelligent assistant system is put forward. The system collaborates with Canvas to automatically create folders according to the user’s current enrolled courses. For example, the user is taking four courses this semester, which are “ENGGEN 303”, “SOFTENG 350”, “SOFTENG 351”, and “SOFTENG 364”. There will be four folders created in the drive immediately, like figure 1. Each course’s assignment is also assigned to a folder. For any group work assignment, the assignment folder will be directly shared with the user’s teammates. Meanwhile, the icon of the shared folder is different from the normal one. For instance, as shown in figure 2, “Assignment2” and “Assignment3” folders are group work, so they are shared with group members automatically. The intelligent assistant system is a perfect solution for students’ “Intelligence need”. Students do not need to manually do the preparatory work anymore. Time is saved for students to work on the project.

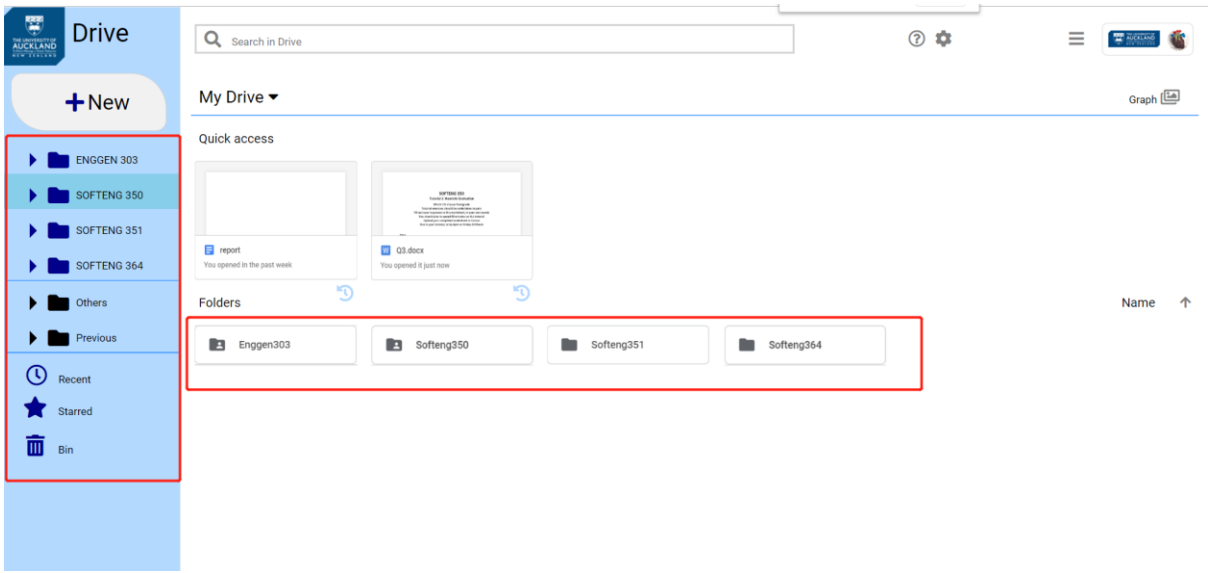

figure 1

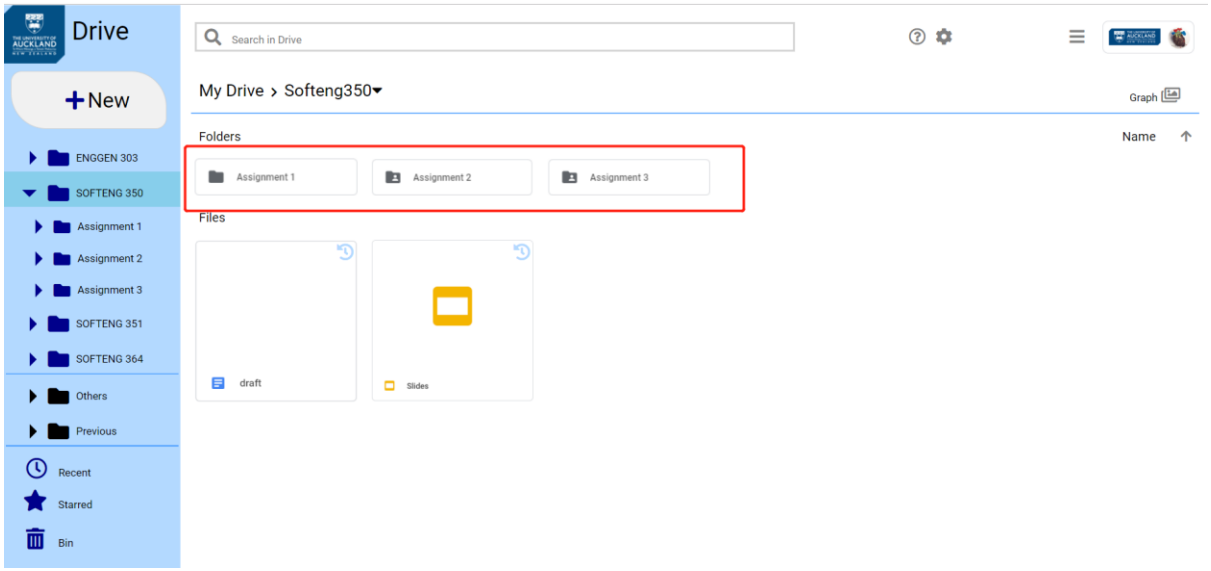

figure 2

“Backup need”: Need to recover from mistakes.

During group work, files are always updated. In the process of time, students may find that the latest-version file is defective, and they intend to roll back to the previous version. Students have to find the old-version file locally and upload it. What if they do not have the past version of that file anymore? It takes an amount of work to get the file back. These problems should not take students a long time to fix. Therefore, students would like to have backup functionality to help them recover from their mistakes.

To solve the “Backup need”, a backup system is offered. In figure 3, a history icon is located at the upper right corner of each file. Whenever the user clicks the icon, the file’s history will be displayed in the pop-up window like figure 4. Each version is shown with the differences made since the previous version. The added lines are highlighted as green while the deleted lines are red. In Google Drive, the manage-version function shows the version without differences. Hence, our backup system is more suitable for university students.

The user is allowed to select a time node and go back. The backup system provides the student with the functionality of returning to past versions of files. It significantly enhances the error-tolerant rate. Even though the user updated a defective version, he may return to the past version.

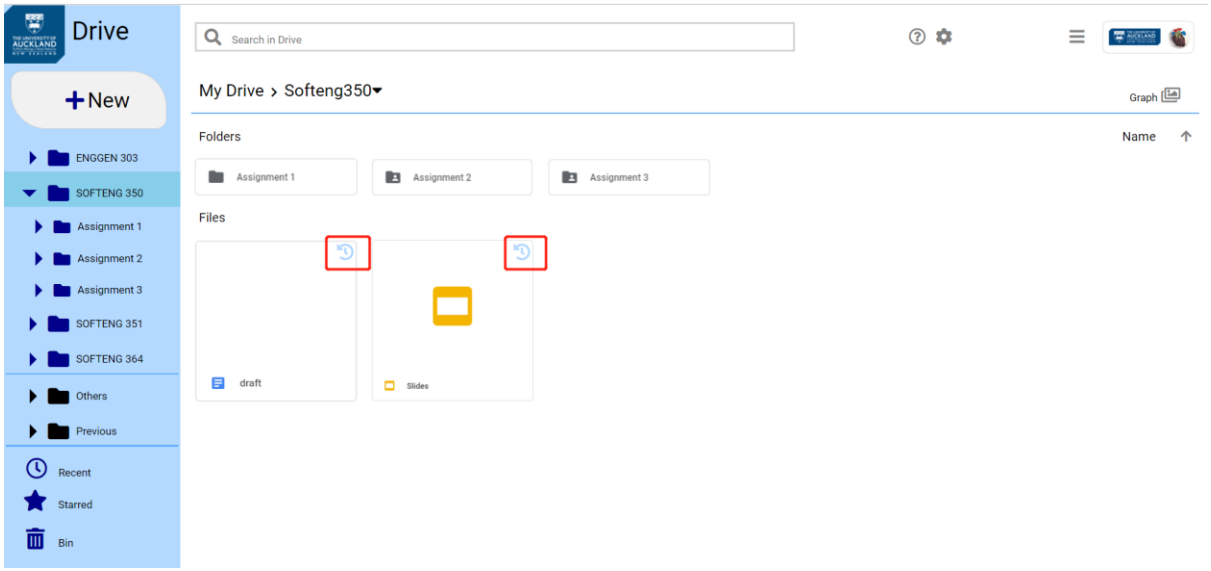

figure 3

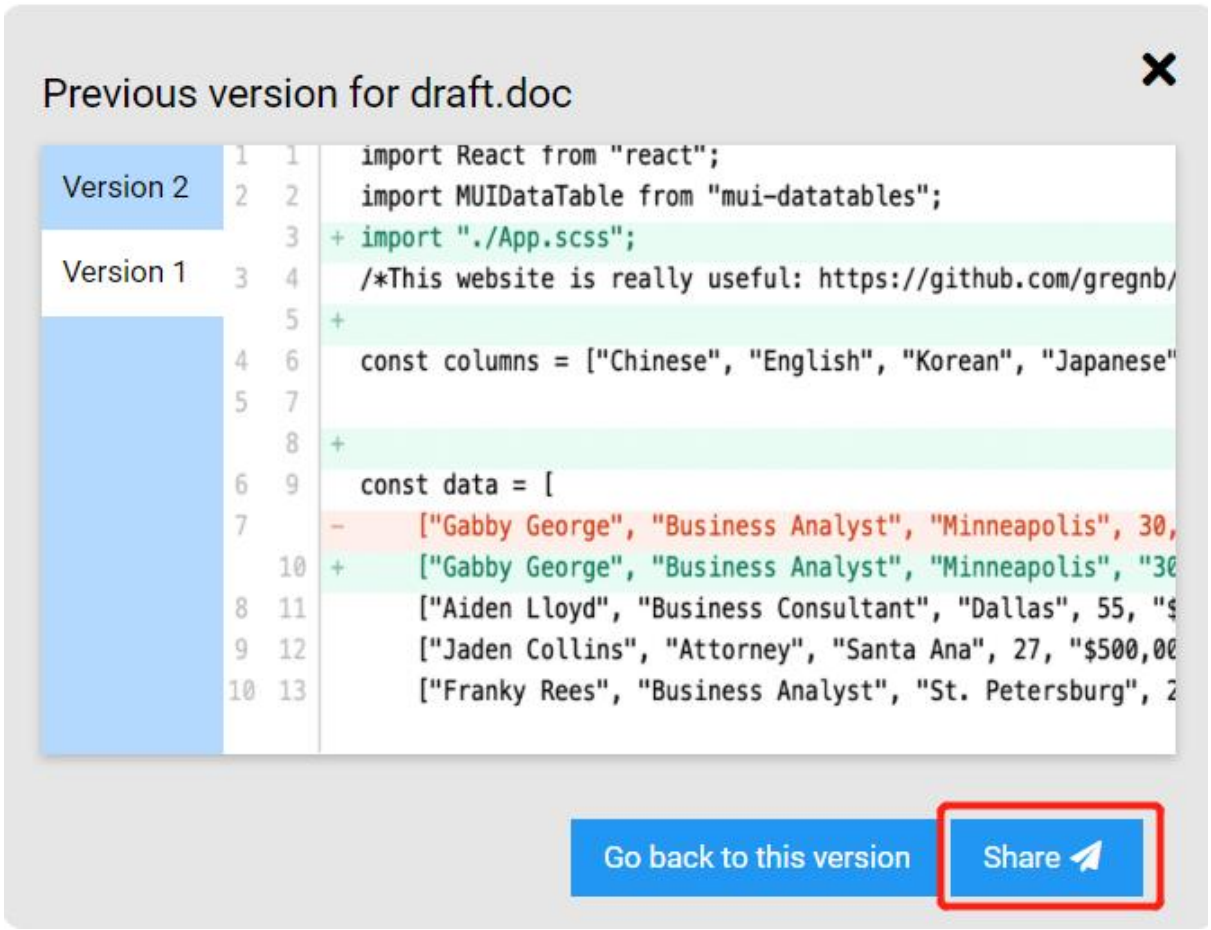

figure 4

“Dependency need”: Need for displaying the relatedness of files.

Students might have related files in different folders. For example, file A and file B are both associated with SOFTENG350 assignment 3. However, files are in distinct folders because one teammate uploads file A to a folder, and the other teammate puts file B in another folder. Meanwhile, students may forget to upload some files of the group work. Students want to absolutely master the drive and know where these related files locate. Hence, a functionality that illustrates the dependency of files is paramount.

To improve the “Dependency need”, the functionality of visualizing related files is provided. As shown in figure 5, there is a graph button at the upper right corner on every page. When the user clicks the icon, the files dependency window comes up. If there is no file on this page, the graph in the window will show the message in figure 6. Otherwise, the graph is like figure 7. Since in the current folder there are two files, two graphs exist. All files in the same graph are associated with each other and located as a central point. The label of each file is the combination of the file’s path and its name. For example, “/SE350/draft.doc” means that the file “draft.doc” is in the “SE350” folder. “/Q1.doc” shows that the file “Q1.doc” is located at the main page. The user can click one graph to magnify it, like figure 8.

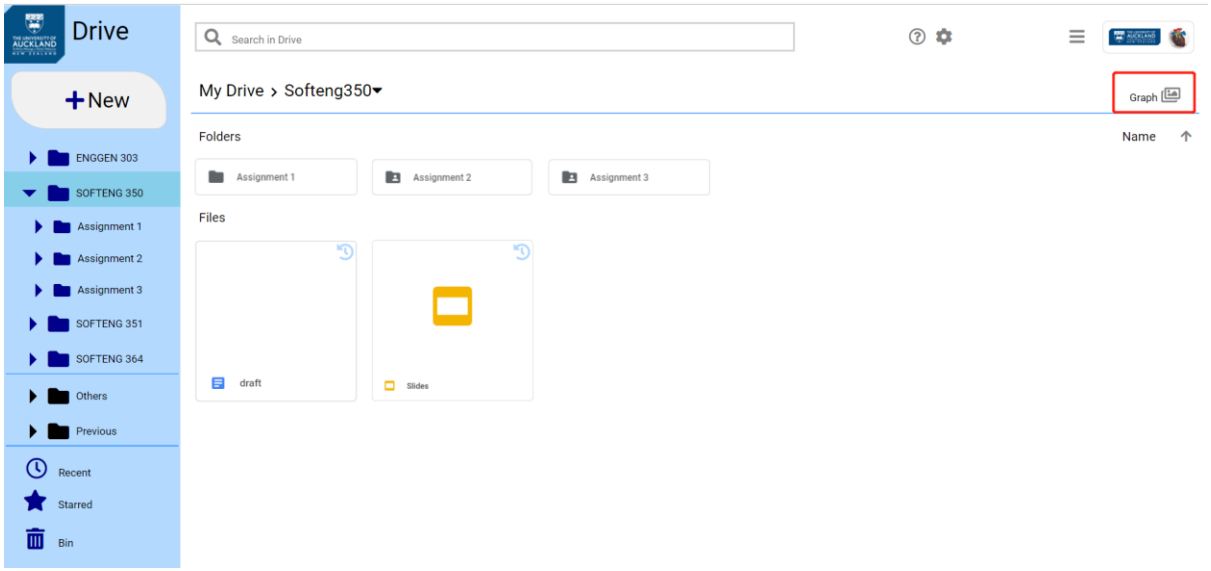

figure 5

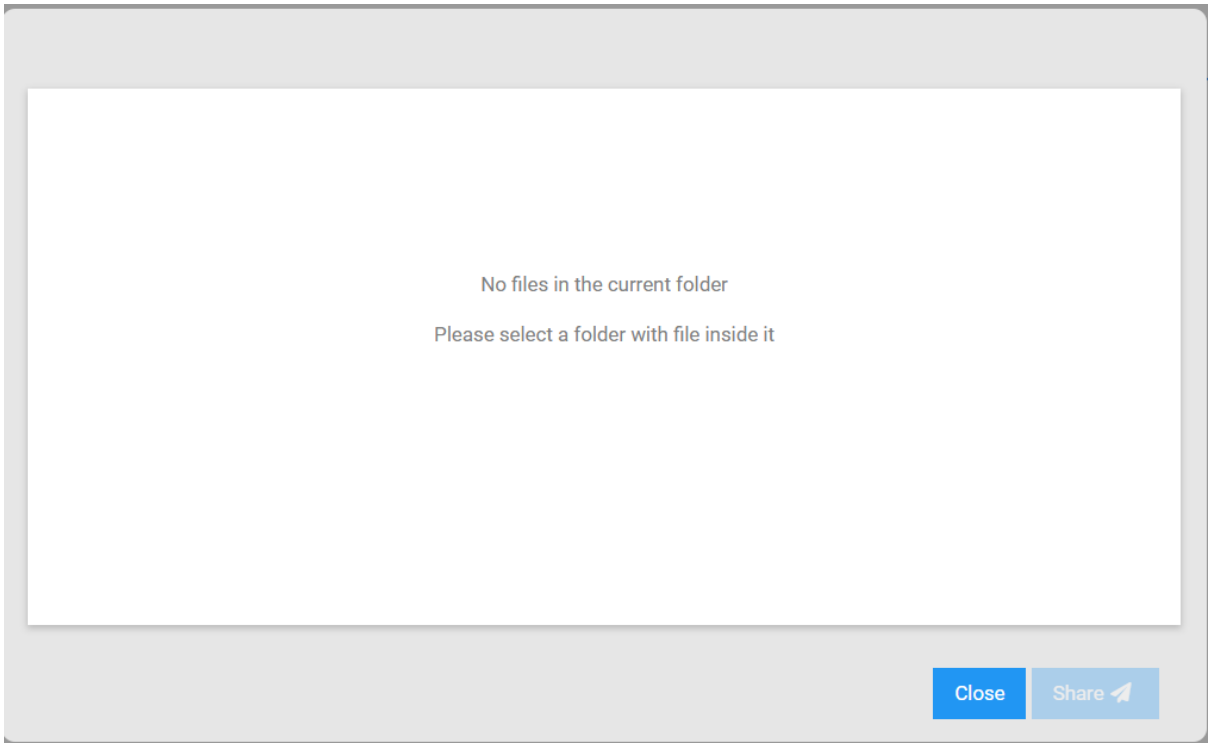

figure 6

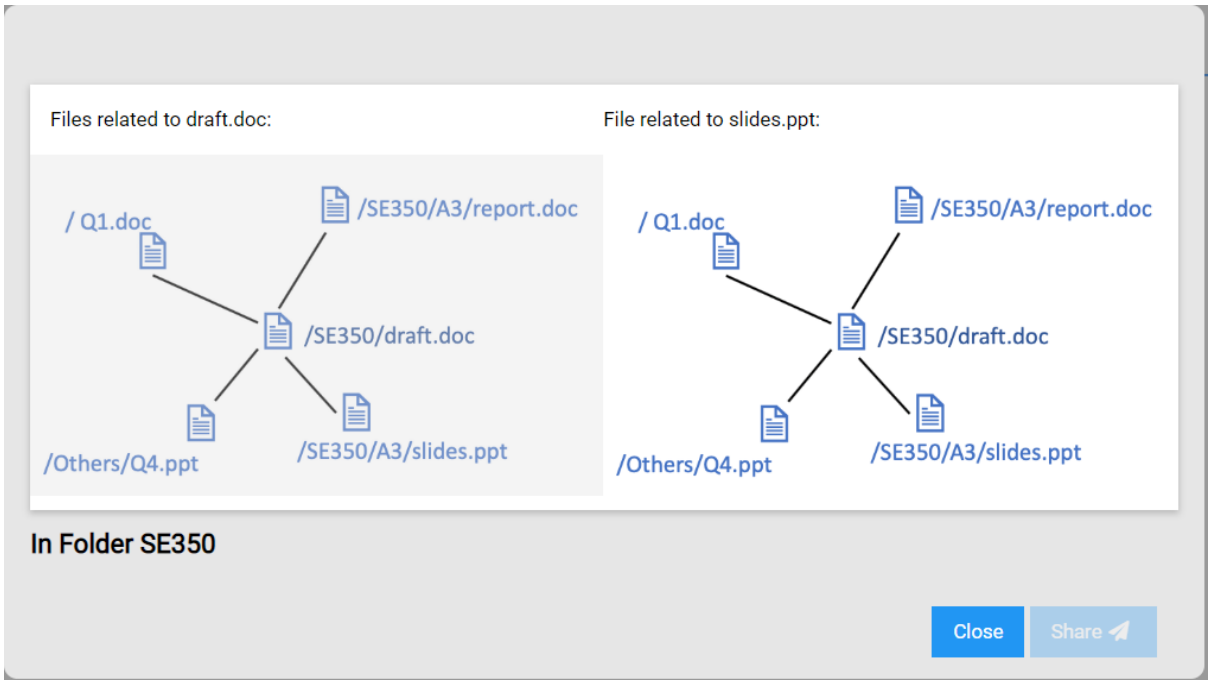

figure 7

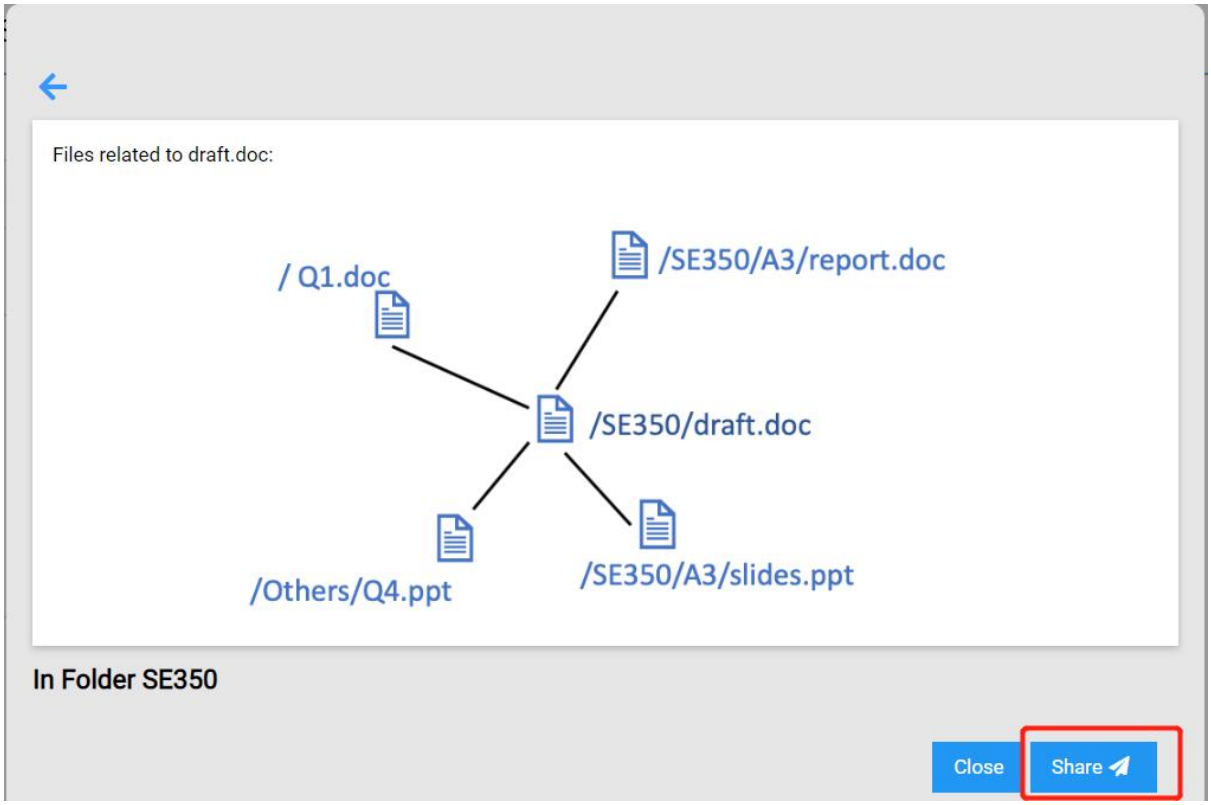

figure 8

Part 1.2 Redesigning the sharing feature

As mentioned above, “Dependency need” is a crucial problem. Even though users can view the related-file graph, they may also tend to share these related files with other people at once. Hence, this enhanced sharing functionality is added to the sharing feature. When the user right-clicks the file and selects the “share” option, a pop-up window will be displayed like figure 9. The user can click the “Share all files” button to observe all related files and share them. Besides, users can also leave messages to the partners.

Meanwhile, the functionality of both the graph button and version button is extended. Now they not only allow users to observe the results, but also provide a sharing function like figure 8 and figure 4.

No matter how the user shares the file, as long as he shares it successfully, a success message will display like figure 10. The improved functionality significantly solves the user need as well as increases the usability of the website.

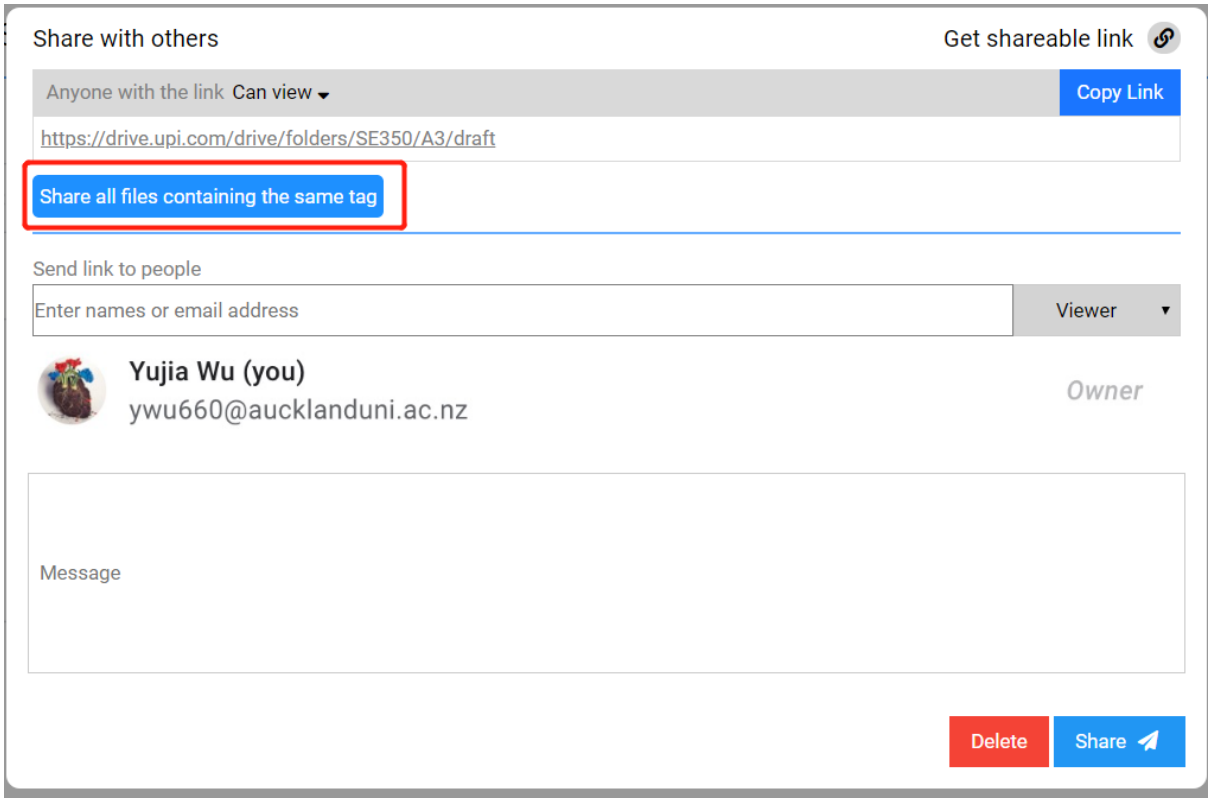

figure 9

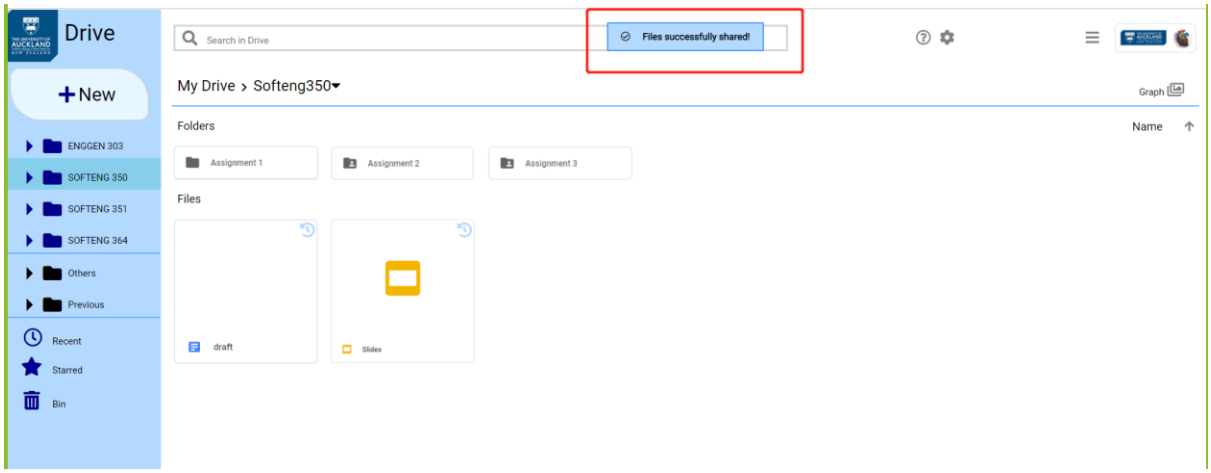

figure 10

Visual Design

The visual design of the website is according to the Gestalt perception principles as well as design principles. The design also refers to Google Drive because university students commonly use it. A similar UI increases the ease of learning for users.

Since the target users are university students, the website style should not be garish. Instead, it tends to be succinct and elegant. Hence, monochromatic coloring is used because it is the simplest color combination but brings a high performance. The dominant hue of the website is blue as blue symbolizes faith, wisdom, and trust, which are also beliefs that the University of Auckland owns. Meanwhile, blue can slow human metabolism and produce a calming effect. It is beneficial to people's mind and body. What's more, blue is consistent with the University of Auckland logo. Therefore, blue is considered as the colour motif of the website. This website is created for the University of Auckland, so its logo is combined with the word "Drive" and places at the top left corner of each page. It is emphasized by the isolated location so that users are always able to notice it.

For every page, there are three zones: the top zone, the left zone, and the central zone, as shown in figure 9. In the top zone, there is a search bar, a help button, a setting button, a format button, a graph button, and a directory path. All buttons except the graph button are replaced with an icon because icons can accelerate the interaction. People generally need less time to see and understand the icon than reading and understanding the text. The graph button has a word plus icon on it because this is new to fresh users. The directory path is emphasized by magnification so that users can know their location all the time.

The left zone contains a "New" button and a sidebar whose background colour is pale cornflower blue. The colour is in contrast with the white background in the middle body of the page. The colour contrast compartments the page into two main sections and emphasizes the importance of the sidebar. Inside the sidebar there are various types of folders. Proximity and similarity principles are implemented to distinguish folders. The same type of folders is shown in the same colour and size. Lines are also used to ensure that users can realize the grouping immediately. The selected folder is colored cerulean to be emphasized.

In the central zone, each file is shrunk. According to the area principle, objects with small area tend to be seen as a figure instead of the ground. Users should recognize the file as a figure.

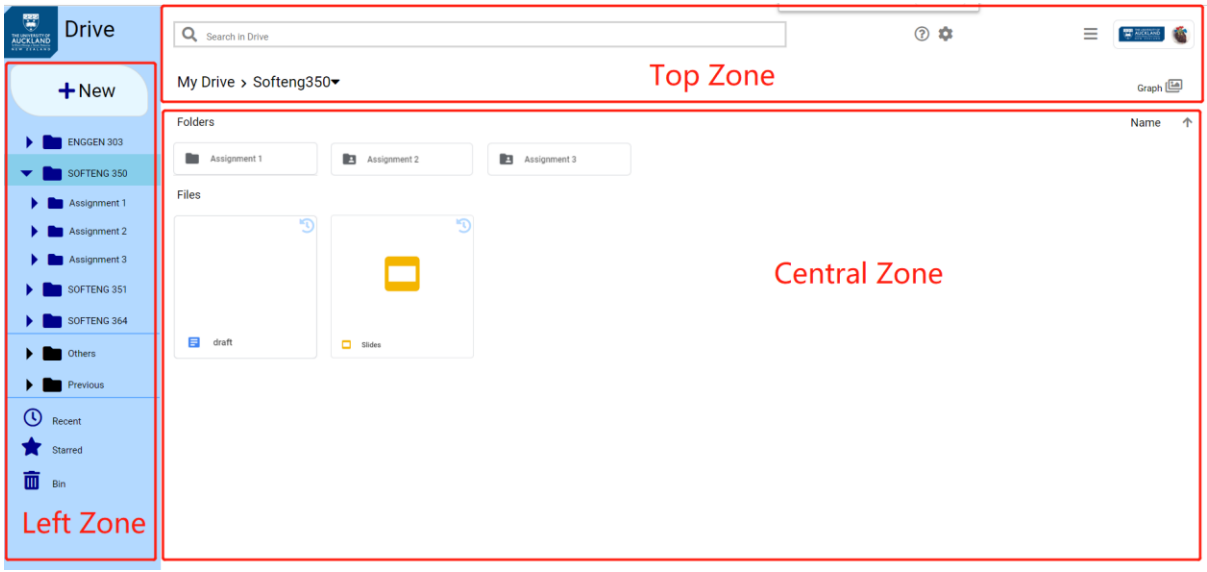

figure 11

Part 1.3 Video

Video link:

https://youtu.be/5qE-iFE9sZI

Part 2 Usage Testing

Part 2.1 Protocol Description

In the task instruction part, five tasks have been prepared for users. The first task is to explore the homepage of UOA Drive. We would like to know the users' first impression. The prompt is asking the participant to play around the home page and speak out what he is thinking and how he feels about UOA Drive. Meanwhile, explain to users that this is a prototype, which means some functions have not been implemented yet.

The second task is to share the draft file in the "SE350" folder. The prompt is "Have a try to share the draft.doc file". If the user is confused and does not know how to continue, we will hint that the operation is similar to Google Drive. This task evaluates the usability of the sharing function.

The third task is similar to the second task, but it is to test the shared functionality of related files. The task is to "share all the related files of the draft file in the "SE350" folder. Since the phrase "related files" may be confused, we tend to know how the user understands it. We will ask the user his understanding of related files here. If the user misunderstands it, we know we may need to change the website to clarify what it really means. Then we will give the context and assumption to them. Afterwards, if the user is still lost, we will furthermore notify the user how he processes in task 2 as a hint because the initial operating steps for task 2 and task 3 are exactly the same.

Task 4 is to find and share the last version of the draft file. The prompt is the same as the task. A hint may be given if the user cannot find this feature. "Look carefully to distinguish the difference between a file in Google Drive and a file in UOA Drive". Sometimes, the user might omit the version icon at the upper right of a file, even though the hover effect is available. This task checks the usability of the backup system.

Task 5 is to find the graph which illustrates the related files in the "SE350" folder. The prompt is "Find files that are related to each file in the SE350 folder". If the user does not discover the graph button, we will give this clue "see if there is some icon or button new to you". The task is to examine the usability of the dependency system. We would like to know if users enjoy this feature.

There are two participants, so we change the task order to see if the order influences the learning effect. After they finish these tasks, a questionnaire is sent to them. We intend to receive their feedback on UOA Drive.

The questionnaire includes eleven questions. Question 1 is about the overall user experience. We tend to know users' feelings and perception by grading. Question 2 to 7 asks users to grade the website via various aspects and functions. These questions allow us to quantify the website in different ways. Question 8 to 10 are open questions, and they can provide us with rich qualitative data. It is the best for finding the seeds of resolutions to problems. The last question is to compare our product with the competitive product Google Drive. We want to see the advantages or disadvantages of our product.

Part 2.2 Usage Testing Result

We have invited two participants to attend UOA Drive usage testing. The participants are our target users and both of them from the University of Auckland. Participant A is a Civil Engineering Part 3 student, and participant B is a Software Engineering Part 3 student. Both students frequently use Google Drive for their studying and group work. However, participant A has no knowledge of the UI design due to his specialization. On the other hand, participant B has also learnt the course human-computer interface, so he has a better understanding of the website design.

Participant A (Civil Engineering student): The task order is 1, 2, 3, 4, 5

User class	UX Goal	UX Measure	Measuring Instrument	UX Metric	Baseline Level	Target Level	Observed Results
University students, for groupwork	Subject satisfaction on UI	First impression	Task 1: explore the drive	Users' assessment and grade on question 2	Grade C	Grade A	A
University students, for groupwork	Fit for use of sharing functionality	User performance	Task 2: share a file	Time to complete the task	60s	20s	47s
University students, for groupwork	Ease for use of sharing functionality	User performance	Task 2: share a file	Number of mouse clicks	20	10	12
University students, for groupwork	Fit for use of sharing functionality	User performance	Task 3: share related files	Time to complete the task	60s	20s	fail
University students, for groupwork	Ease for use of sharing functionality	User performance	Task 3: share related files	Number of mouse clicks	20	10	16
University students, for groupwork	Fit for use of version feature	User performance	Task 4: find the last version of file	Time to complete the task	60s	20s	21s
University students, for groupwork	Ease for use of version feature	User performance	Task 4: find the last version of file	Number of mouse clicks	20	10	6
University students, for groupwork	Fit for use of dependency system	User performance	Task 5: find the related file graph	Time to complete the task	60s	30s	72s
University students, for groupwork	Ease for use of dependency system	User performance	Task 5: find the related file graph	Number of mouse clicks	20	10	13
University students, for groupwork	Overall subjective satisfaction	Overall impression	Question 1 and 11 in questionnaire	Users' assessment , grade, and answer	Grade C Google Drive	Grade A UOA Drive	B UOA Drive

Participant B (Software Engineering student): Task order is 1, 4, 5, 2, 3

User class	UX Goal	UX Measure	Measuring Instrument	UX Metric	Baseline Level	Target Level	Observed Results
University students, for groupwork	Subject satisfaction on UI	First impression	Task 1: explore the drive	Users' assessment and grade on question 2	Grade C	Grade A	A
University students, for groupwork	Fit for use of sharing functionality	User performance	Task 2: share a file	Time to complete the task	60s	20s	39s
University students, for groupwork	Ease for use of sharing functionality	User performance	Task 2: share a file	Number of mouse clicks	20	10	10
University students, for groupwork	Fit for use of sharing functionality	User performance	Task 3: share related files	Time to complete the task	60s	20s	32s
University students, for groupwork	Ease for use of sharing functionality	User performance	Task 3: share related files	Number of mouse clicks	20	10	13
University students, for groupwork	Fit for use of version feature	User performance	Task 4: find the last version of file	Time to complete the task	60s	20s	36s
University students, for groupwork	Ease for use of version feature	User performance	Task 4: find the last version of file	Number of mouse clicks	20	10	12
University students, for groupwork	Fit for use of dependency system	User performance	Task 5: find the related file graph	Time to complete the task	60s	30s	44s
University students, for groupwork	Ease for use of dependency system	User performance	Task 5: find the related file graph	Number of mouse clicks	20	10	18
University students, for groupwork	Overall subjective satisfaction	Overall impression	Question 1 and 11 in questionnaire	Users' assessment , grade, and answer	Grade C Google Drive	Grade A UOA Drive	B Google Drive

By having usage testing, we found that there are many potential rooms for improvement. The biggest issue is that new users are confused about the graph button, even though the button has a tooltip which will be displayed as long as the user puts the mouse on it. We realize that the tooltip and the button name is not clear enough. Both participants are not able to understand the function of the graph button with the tooltip. We are going to change the tooltip and rename the button to ensure the understanding of users.

Another problem is that the graph of the related file itself is not explicit. As shown in figure 7, participant B initially supposed that the draft.doc file is the parent file because it sets at the centre, and all files connect to it. He then fell into confusion. Afterwards, he realized the meaning of the graph until he saw the title “Files relate to draft.doc”. We will modify the graph as well as the title to avoid misunderstanding users.

The version feature is excellent because both participants totally understand its functionality. The sharing functionality is almost the same as Google Drive, so they have no problem with it. The first impression and overall impression are generally good, based on the questionnaire.

Part 3 Appendix

3.1 Protocol

Greeting

Welcome to attend the SOFTENG 350 Assignment 3 UOA Drive usage testing. The developing team significantly appreciates you accepting the invitation.

Informed Consent for Participant

Development Organization: SOFTENG350 Assignment3 Group12

Name of Project: UOA Drive

Project team members: Ziwei Yang, Yujia Wu, Jiawei Ge

Purpose of your participation

As the project UOA Drive progresses, the prototype is basically generated. The essential functionality is available. Hence, you are invited to participate in evaluating and improving various designs of the project. We are looking forward to receiving your valuable advice and comments.

Procedures

You are going to perform a set of tasks using UOA Drive. These tasks consist of exploring the website, operating a couple of functionality, and sharing some specified files. Your role is to help us evaluate the designs. We promise that we will not evaluate you or your performance in any way.

When you are performing various tasks with the system, your actions and comments will be recorded and noted. We sincerely would like you to tell us what you are thinking and what you are trying to do during the process. You may also be asked questions during and after the evaluation to clarify our understanding of your assessment. Besides, there is a questionnaire relating to your usage of the project. We are eager for you to fill it out as well.

The evaluation session will last around half an hour. The tasks are not tiring, but you are welcome to take a rest anytime as you need. If you prefer, we can divide the session into two shorter sessions. Or if you have any queries, please feel free to discuss with the development team.

Risks?

There are no known risks to the participants.

Benefits of your participation?

Your valuable evaluation will improve the project UOA Drive. To appreciate your contribution, we will reward each participant a ten-dollar voucher.

Task instructions

Assume you are a university student working on a group assignment.

First-person task order: 12345

Second person task order: 14523

1.

Hypothesis: The style is suitable for university students. Users may like it.

Task: Explore the drive, get your first impression.

Prompt: Play around the home page. Let me know your impression on the website. Because this is a prototype, not every button has functionality built on it. When you click on any button, still let me know what you think this button is and what it should do.

2.

Hypothesis: Target users are university students, so they may know how to share a file.

Task: Share the draft file in the “SE350” folder.

Prompt: Have a try to share the draft.doc file inside “softeng 350” folder.

3.

Hypothesis: Users should notice the “Share all files containing the same tag” button.

Task: Share all the related files of the draft file in the “SE350” folder.

Prompt: Image you are working on a group assignment and you are able to give tags to each file. Files with the same tag are considered as “related”. Have a try sharing all files related to “draft.doc” inside “softeng 350” folder.

4.

Hypothesis: Users may omit the history icon at the upper right of each file.

Task: Find and share the last version of the draft file in the “SE350” folder.

Prompt: Try to share the previous version of the draft file.

5.

Hypothesis: Users may omit the graph button at the upper right of the page.

Task: Find the graph which illustrates the related files in the “SE350” folder.

Prompt: Looking at the two files in the “softeng 350” folder, are you able to find all files related to them?

Questionnaire

1. If you grade your experience using this website, from A to F where A is excellent and F is failing, what grade would you give, and why?

2. What is your first impression of the website? Why? [A-F]

3. How easy do you think it is to use this website? [A-F] A being very easy, F being very hard to use.

4. How useful do you think it is to show the relationship graph between files. [A-F]

5. How useful do you think it is to provide options of showing different versions of files? [A-F]

6. How useful do you think it is to have folders created for you based on your courses and assignments? [A-F]

7. How useful do you think it is to allow you to share multiple related files at the same time? [A-F]

8. What is one thing you like best?

9. What is one thing you like the least?

10. If you could change the website, what functions would you want to have?

11. In terms of doing group work, do you prefer to use Google Drive or UOA Drive for your university work?

3.2 Participants A notes

Task order: 1, 2, 3, 4, 5

T1.

- First impression: clicking the folders, trying to find the files in
- Expect dropdowns because they have triangles.
- Expect click A1 will show files of A1.
- Create new file/folder after clicking new.
- Click recent, look files recently open. Start find any files the user star.
- Click the drive, expect to take me to the homepage.
- Searching Q3, expect the searching result related to Q3 will show.
- Setting button for changing setting for the drive.
- Information button hope to see the information.
- Expect: User account to see the account or switch account.
- Menu button: not sure what to do, possibly apps relate to the drive.
- Others folder: files not specificly
- Past enrolled: the old courses from last semester.

T2.

- Right click: and share.
- No recommendation for email when typing. Then share.

T3.

- Share the whole SE350 folder. Drag all of them, try to share all files together but failed.

T4.

- Time icon click. Go to the version one and click the share button directly and share the previous version.
- The understanding of version 1 is earlier, no date, not 100%sure about is this previous.
- Red line: what has been removed and green line what have been add seen last version.

T5.

- Left-click just share, no information button, don't know how to share.
- The graph button provides information but not sure what graph showed and related.
- How is the picture related to the tag?
- Don’t know what the graph shows, The files related to draft.doc.

3.3 Participants B notes

Task order: 1, 4, 5, 2, 3

T1:

- Looks like Google Drive, quite similar
- Sidebar, different folder for different courses, sub folder in sidebar
- Other: out of your course, other specialization students share something with you
- Past enrolled: past courses enrolled previously ,;ole part 1 , 2
- Star - highlighted, Recent – viewed recently, Bin - discard
- Graph – Don't really understand it. Does it mean preview?

T4:

- This icon looks like the history, interactive
- Version 1 is the previous version
- Similar to Google Drive, copy link, input email address, find that there are two different ways of sharing the file
- Share all files -> don't understand the graph , parent file?

T5:

- Discover the graph button. After he saw the title, realized the functionality and meaning of the graph.

T2:

- Same operation as Google Drive
- The share window is always the same. [task 2 has already saw this window]

T3:

- Had not seen the "share all files" button in the share winder, stayed at this window for a while
- A few seconds later, saw the button
- Realize the functionality