

COSC 4P02 Software Engineering 2

Progress Report 1

1. Names and Roles:

Name	Brock ID	Email	Role(s)
Vincent Zhang	6697114	vz18iu@brocku.ca	Dev team
Hi Leung	6799969	hl19wl@brocku.ca	Dev team
Louis Wang	6116271	lw16bn@brocku.ca	Dev team
Yujia Zuo	6567150	yz18fa@brocku.ca	Scrum Master, Dev team
Hang Li	7319957	hl21bi@brocku.ca	Product Owner, Dev team
Ziyuan Xu	5476650	tx13al@brocku.ca	Dev team
Yifeng Zhang	6593487	yz18el@brocku.ca	Dev team
Jiahao Pang	6366173	jp17gh@brocku.ca	Dev team

2. Features we planned to implement this sprint:

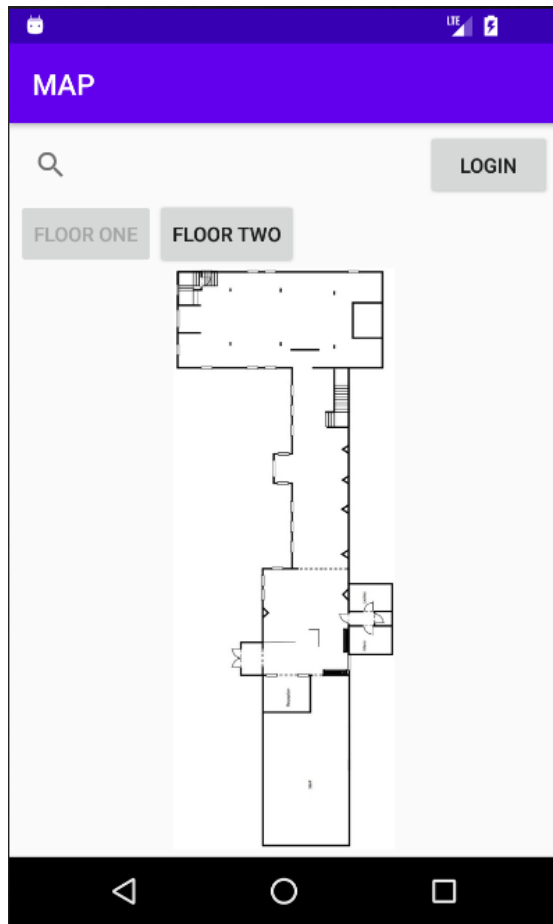
- a. Basic interface design: Accomplished already
 - For this feature, we just wanted to get familiar with the interface creation on Android Studio. This involved getting the map on the screen as well as implementing some basic buttons to let us go between those maps.
- b. Ability to rotate the screen: Accomplished already
 - For this feature, we wanted to implement screen rotation so the user can use the map in both landscape and portrait orientation. To make it intuitive to use, the map also rotates along with the phone.
- c. Database creation: Accomplished already
 - Although this isn't a "feature", we decided to add it under this section because it is a crucial part in allowing everything else to function. The creation of this will allow for the creation of other components like the login system, search bar and navigation.
- d. Login System: In Progress
 - This feature was intended to give the museum staff the ability to make changes to the map but restrict guest users from doing so. Having a login will allow us to differentiate the level of control the different types of users will have over the map.
- e. Search Bar: In Progress
 - This feature would allow users to search for specific items on the map. However, the viability of this is dependent on the data the museum has (and their naming scheme is quite poor). Thus, a secondary use of this could be for staff members who already know the item's id or name and want to quickly locate the item in case they want to remove it or move it to another location on the map.
- f. Navigation: Coming after the search bar
 - For this feature, we want to provide a shortest path between two locations. We do not have a fully fleshed out idea for this yet since the other prerequisites are being worked on and have a higher priority.

3. Coming features that we plan to implement:

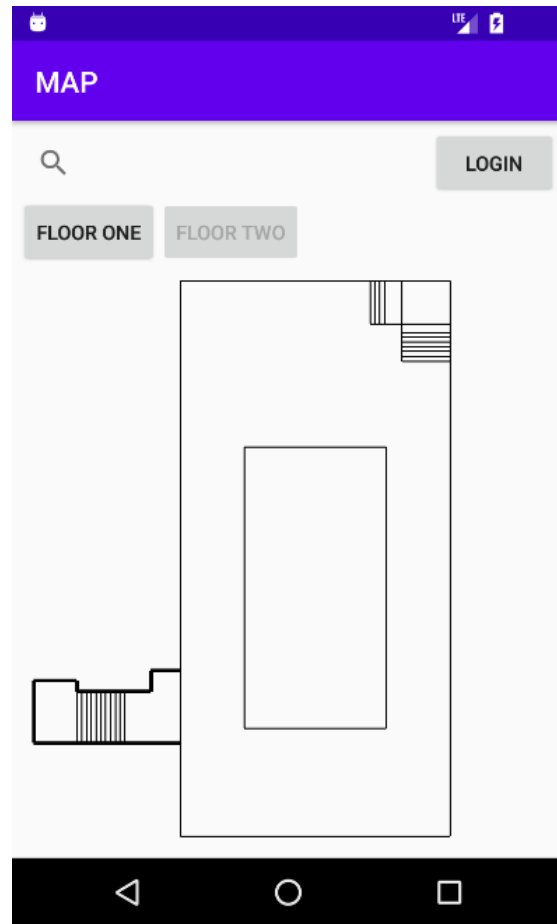
- a. Login system:
 - A login system where the staff would login with their username and password to have the access to map editing features like adding, removing and editing showcases (displays).
 - Admin users will also have access to a staff login management screen where they can change staff account information.
- b. Showcase system:
 - Staff members should be able to click on the map and add or remove a showcase or edit it if one already exists at that location. This allows the map to be more dynamic and modifiable if changes are made in the future to the items on display or if showcases get moved around.
 - Part of this involves creating a list of items per showcase but the implementation details need further discussion.
- c. Map zooming:
 - Since the first floor map is quite long, we want to implement a zooming function to let users zoom in and out to see different levels of detail on the map.
- d. Database integration:
 - The app should be able to query information from the database for purposes like: displaying showcases on the map; displaying a list of items per showcase; displaying details of each item when selected; and user account management.
- e. Search bar:
 - The search bar should allow users to search for a location. Upon clicking on it, it will direct them to the location of the item (the showcase) and allow them to select options like: view item or find path to item.
 - Since it shows the entire showcase as a result of this interaction, the other items in the showcase will also be displayed in a list alongside the searched item. However, the searched item will be highlighted to make it obvious which item they searched for.
- f. Navigation:
 - As discussed above, this should provide a shortest path between a pair of locations (maybe a pair of showcases) in the form of a line.

4. App screenshots:

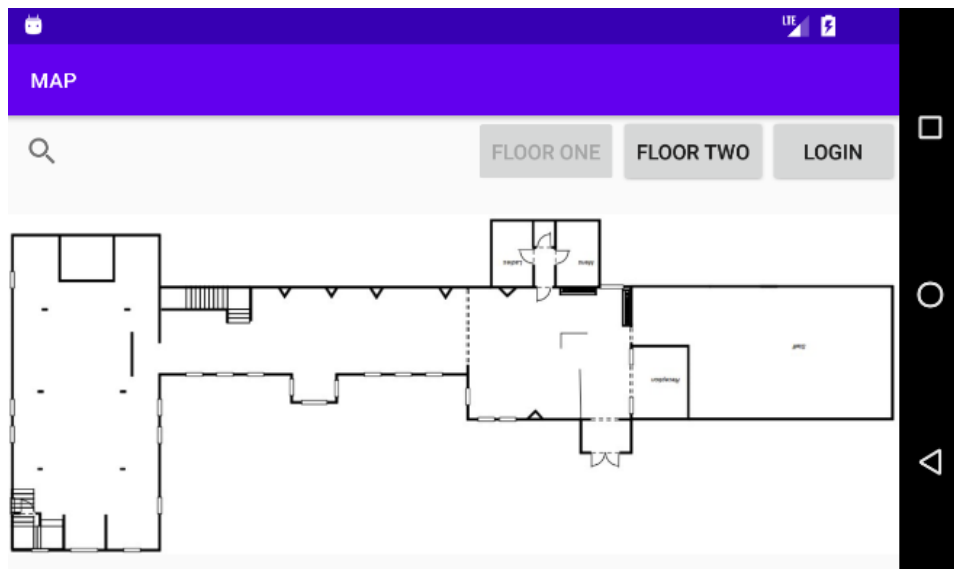
Portrait Layout of Floor One



Portrait Layout of Floor Two



Landscape Layout of Floor One



5. Sprint

Sprint 1: Getting an understanding of what we're doing (31 Jan-16 Feb)

- We spent the majority of sprint 1 trying to understand what we were supposed to implement. This consisted of brainstorming ideas for features, identifying which system components we needed, and selecting the platform to implement it on.
- Review: At this point, we did not start programming yet. All we had were ideas and a few drawings (which can be seen in the meeting minutes). So arguably, we did accomplish what we set out to do (which was to brainstorm) but there was nothing to demonstrate in terms of a product.
- Retrospective: We did well with gathering ideas and designing this project. It took us a considerable amount of time to design since we had to design the requirements document from scratch, but this helped us gain a stronger understanding. It was also helpful visiting the museum so we could put ourselves into the shoes of a user and identify what we would like to see on the app.

Although we were very welcoming of different ideas and opinions, we finally had to settle on something concrete for our design. Unfortunately, this took a lot longer than we had hoped to which informs us that we should be faster with committing to a decision rather than trying to find the most optimal solution (i.e., finding something good enough and sticking with it rather than doing nothing at all).

- After the review and retrospective, we determined that our next steps were to get our hands dirty and start playing around with the tools we will be using to implement the product.

Sprint 2: Getting a grip on the technologies being used

- We spent a lot of sprint 2 trying to understand the technologies we were using (Android Studio and AWS).
- Review: Although we currently do not have a functioning product to present, we are able to show the components and the database through screenshots. However, we do not have much more to demonstrate beyond that since we haven't integrated them together yet.

- Retrospective: We started off this sprint strong after finally deciding on the platform in the last sprint. Combined with an understanding of what we had to do, we started going our own ways and were able to come back with things to show each other at each meeting. It was really nice getting to see a working UI and I think that helped us gain more confidence in our project. We also got to learn a lot when using these new technologies whether it was good or bad (smooth or troublesome).

However, we were once again facing the issue of being able to do the same thing in different ways. In this case, we were stuck with deciding on a specific implementation for certain features (e.g., data storage, map representation, etc.). Luckily, we were able to resolve these issues during our meetings.

We also could have done a lot better on using our Github page since everything is quite scattered right now and not centralised meaning we are relying on sending code between each other. Although it is fine for now, this may become a major source of problems after the program starts growing. This is also the reason behind us not having/presenting github logs.

- Thus after the review and retrospective, we determined that we had a lot to do starting with integrating the database with the application to allow for the development of the back-end and integration with the front-end. We also have to address issues related to the map such as the representation of boundaries and coordinates. Lastly, we really need to begin using our github more as a version control/management system rather than a secondary repository to our Google Drive one which is used for working with documents.

6. Issues:

Solved:

- a. One major setback was that we took almost a month deciding between implementing a website or application. Although the website would be more effective from a user perspective, we decided to go with creating an app given our group's experience (and lack of experience with websites). Thus we settled on creating an Android app since we could utilise our prior experience with Java.
- b. The database design had to be modified slightly upon finding a more efficient solution. Since each item is only displayed in one showcase, it made more sense to add a showcase id column to the item table rather than having a separate table for showing which showcase contained which item(s).

- c. We had to get data for the museum artifacts since we could not gain access to the museum's database directly. The details are discussed below but in short, we used a web-crawler and reformatted the data to fit our database's constraints.
- d. We have also changed the way we want to represent the map within the app on the back-end side. After considering the convenience of building the navigation paths, we decided to use lines to draw the map instead of using the blueprint as background directly.

New issues:

- a. When implementing the zooming functions, the platform's built-in zooming functions did not work how we intended it to with our coordinate system. Clicking on the system would work based on the screen's absolute coordinates rather than the coordinates relative to the map.
- b. In order to continue with the implementation of a few of our key features, we have to find a way to connect the app and database together.

7. Contributions and achievement:

Front-End:

- Creating a search bar for customers to search the specific exhibits' locations, also can be used for navigation, and we will have some other functions like category search. (Yujia Zuo)
- Navigation function: the application can find the shortest path from one position to another, and display it on the map. (Jiahao Pang)
- Log-in System: Employees can login with the username and password. After logging in, the system enters an "edit mode" where the employee can change the locations of showcases in the exhibits. Doing so will also modify the information within the database. (Louis Wang)
- Map Display Interface: Show the layout of the map (First floor: Ziyuan; Second floor: Yifeng Zhang; Combine: Vincent Zhang)
- Overall members: Yujia Zuo; Jiahao Pang; Louis Wang; Vincent Zhang; Yifeng Zhang; Ziyuan Xu

Back-End:

- Web crawler: Since we could not directly gain access to the museum's database, we created a python web crawler to grab all the data from their webpage (<https://niagarahistorical.pastperfectonline.com/>). The result of this was a csv file that had to be cleaned.
 - Member: Ziyuan Xu (Web crawler, first clean), Hi Leung (second clean + reformatting for import)
- Database Design: We are using Amazon's online service (AWS RDS) to host our PostgreSQL database. We opted to use this because the free tier would allow us to host a database that is accessible by all of our members without incurring any major costs.
 - One of the major set-backs we had was in importing the csv file into the "item" table (previously named "artifact"). Postgres had some specific requirements that weren't clearly stated which prompted the need for reformatting of the data in the file.
 - The overview of the steps taken can be found within my [working document](#).
 - Members: Hi Leung (creation, importing, managing, etc.), Hang Li (suggestion of adding sid to the item table which reduces the overall number of tables.)
- Database Connection: Make connection between the database and our application. The data can be obtained or be modified by the application.
 - Currently, we only have one access point for the database (Hi Leung's laptop through pgadmin4 because we haven't figured out a way to allow remote connections securely).
 - One of the tasks of our current sprint is to implement a method of connecting the database to the app safely and securely. This is because under the assumption that other users (non-programmers) will use the app, we shouldn't allow direct access to the database. Thus, the prime candidate solution for this is to use a REST API but we have not had time to dive into it yet as the database set-up took longer than expected.
 - Members: Hi Leung; Hang Li
- Overall members: Hi Leung; Ziyuan Xu; Hang Li

8. Database

“Item” table

1 `select * from item`

Data Output Messages Notifications

	obj_id [PK] character varying (255)	obj_name character varying (255)	obj_desc text	obj_start_year integer	obj_end_year integer	obj_url character varying (255)	obj_img character varying (255)	aid integer
1	970.291	Bead	Small stone bead coloured greenish-blue.	0	0	https://niagarahistoric...	https://s3.amazonaws...	0
2	989.019	Tie.Bow	This is a white, linen clip-on tie. It is tied in a bow on ...	1920	1920	https://niagarahistoric...	https://s3.amazonaws...	0
3	970.247	Bead	This cream-coloured bead is made from a hollowed o...	0	0	https://niagarahistoric...	https://s3.amazonaws...	0
4	970.248	Bead	This cream-coloured bead is made from a hollowed o...	0	0	https://niagarahistoric...	https://s3.amazonaws...	0
5	971.341.17	Ball.Musket	This clay musket ball with a circumference of 5cm.	0	0	https://niagarahistoric...	https://s3.amazonaws...	0
6	970.249	Bead	This piece of hollow bone has been drilled through to...	0	0	https://niagarahistoric...	https://s3.amazonaws...	0
7	989.5.98.2	Ribbon	This is a red, white and blue rosette ribbon.	0	0	https://niagarahistoric...	https://s3.amazonaws...	0
8	990.049.12	Clarinet	No Description Available	0	0	https://niagarahistoric...	https://s3.amazonaws...	0
9	996.089(A)	Ball.Musket	One of five fragments of various sized musket balls. ...	0	0	https://niagarahistoric...	https://s3.amazonaws...	0
10	897.157	Ship.Model	The bottom half of a ship model made from wood in ...	1840	1840	https://niagarahistoric...	https://s3.amazonaws...	0
11	900.301	Dyeing Saucer	A saucer used for dyeing silk stockings, gloves, feathe...	0	0	https://niagarahistoric...	https://s3.amazonaws...	0
12	900.91	Sampler	A sampler with various letters and numbers stitched ...	0	0	https://niagarahistoric...	https://s3.amazonaws...	0
13	901.112	Sampler	Fragile and ephemeral, cross-stitch samplers are am...	1834	1834	https://niagarahistoric...	https://s3.amazonaws...	0
14	902.104	Brick	A orange colored brick that is 10.5cm in height and 2...	0	0	https://niagarahistoric...	https://s3.amazonaws...	0
15	902.113	Hearing Aid	This hearing aid or ear trumpet was made around 18...	1882	1882	https://niagarahistoric...	https://s3.amazonaws...	0
16	902.3	Knife.Butcher	This is a butcher knife made of steel and wood.	0	0	https://niagarahistoric...	https://s3.amazonaws...	0
17	902.38	Muddler	This is a toddy muddler made of black walnut. It is sh...	1840	1840	https://niagarahistoric...	https://s3.amazonaws...	0
18	902.73	Gavel	A turned handle and head gavel with circular brass pl...	0	0	https://niagarahistoric...	https://s3.amazonaws...	0
19	904.42	Vase	Posy holder, also called a Tussle Mussie. This is a fu...	1870	1870	https://niagarahistoric...	https://s3.amazonaws...	0
20	904.44	Padlock	A brass 4-dial combination lock.	0	0	https://niagarahistoric...	https://s3.amazonaws...	0
21	904.67	Brooch	This oval-shaped brass brooch has a transparent cov...	0	0	https://niagarahistoric...	https://s3.amazonaws...	0
22	911.14	Figurine:Chair	Soapstone figure replica of the British Coronation Ch...	0	0	https://niagarahistoric...	https://s3.amazonaws...	0
23	911.27	Mirror	A triangular shaped glass mirror fragment from the S...	1857	1857	https://niagarahistoric...	https://s3.amazonaws...	0
24	912.302	Tongs.Fireplace	A rusty tong for a fireplace with oval discs at its ends...	0	0	https://niagarahistoric...	https://s3.amazonaws...	0
25	947.5	Sampler	An unfinished sewing sampler, showing letters and n...	1839	1839	https://niagarahistoric...	https://s3.amazonaws...	0
26	947.6	Sampler	A sampler sewn by Margaret Stewart in 1811. The sa...	1811	1811	https://niagarahistoric...	https://s3.amazonaws...	0
27	969.1	Teaspoon	This silver teaspoon has a plain flat handle and is da...	0	0	https://niagarahistoric...	https://s3.amazonaws...	0
28	969.104	Box:Carpenter's Tool	John Swinton's tool box, which dates from the early 1...	1800	1805	https://niagarahistoric...	https://s3.amazonaws...	0
29	969.107	Clock; Tall Case	A Tall Case Clock brought from Scotland by Mr. Willo...	1830	1840	https://niagarahistoric...	https://s3.amazonaws...	0
30	969.109	Chair	A handmade red-brown wooden chair in folk art desig...	1860	1860	https://niagarahistoric...	https://s3.amazonaws...	0
31	969.11	Spoon	This silver teaspoon features an engraving of the U.S...	0	0	https://niagarahistoric...	https://s3.amazonaws...	0
32	969.112	Trunk	A trunk attributed to John Beach. The wooden trunk l...	1800	1800	https://niagarahistoric...	https://s3.amazonaws...	0
33	969.113	Case.Jewellery	A dark red wooden box, lined with red material and bl...	0	0	https://niagarahistoric...	https://s3.amazonaws...	0
34	969.114	Cradle	A wooden cradle in fair condition. The headrest is hig...	1840	1840	https://niagarahistoric...	https://s3.amazonaws...	0
35	969.122	Desk:Slant Top	A Slant Top Desk from the Niagara Grammar School, ...	1840	1840	https://niagarahistoric...	https://s3.amazonaws...	0
36	969.125	Chair	From 1781 until 1862 Niagara-on-the-Lake (known th...	1820	1830	https://niagarahistoric...	https://s3.amazonaws...	0
37	969.129	Winder:Wool	Wool Winder from around c.1820-30. Clock wheel wit...	1820	1830	https://niagarahistoric...	https://s3.amazonaws...	0
38	969.144	Saucepan	A saucepan circa 1840-60. It is shaped like a large, s...	1840	1860	https://niagarahistoric...	https://s3.amazonaws...	0
39	969.16	Chair	A Sheraton design, hardwood chair from the early 19t...	1825	1840	https://niagarahistoric...	https://s3.amazonaws...	0
40	969.161	Chair	A Sheraton design, hardwood chair from the early 19t...	1825	1840	https://niagarahistoric...	https://s3.amazonaws...	0
41	969.166	Barometer	A barometer with a fahrenheit scale circa 1810, used ...	1810	1810	https://niagarahistoric...	https://s3.amazonaws...	0

Total rows: 1000 of 1760 Query complete 00:00:00.892

- The item table is used to keep track of the museum’s artifacts, exhibit items and all the other stuff listed in their database.

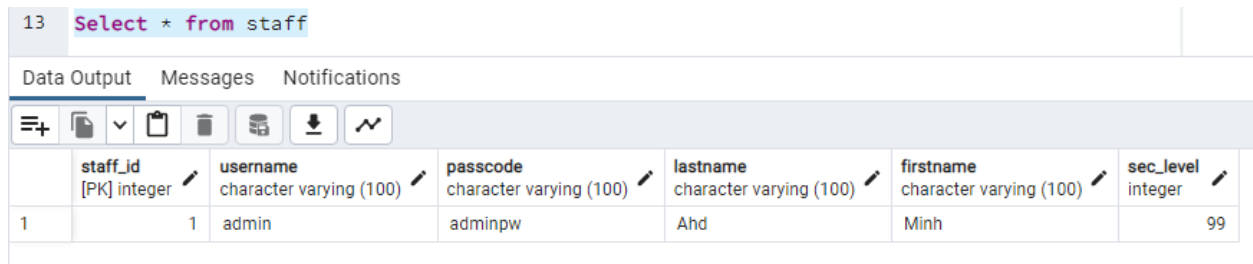
Columns:

- Obj_id, obj_name, obj_desc are all taken directly from the museum’s database website with the url for that specific item under the obj_url tab.
- Obj_img is the first/main image associated with that item.
- Obj_start_year and obj_end_year are either taken directly from the museum’s entry or are estimated in the case of something like “1990s” or “Early 1990s” to which we put

1990-2000 or 1990-1995 respectively. Values of 0 indicate that no date was given and can be used to show “no date” when presenting the item to the user.

- Sid is a foreign key referring to the “showcase” table. Initially, the idea was to set it all to 0 as a default value to have 0 as a default showcase which acted as a “storage” that was not on display. However, the default value has now been set to “null” since it would be less confusing and therefore easier for us to understand.

“Login” table



The screenshot shows a database management interface. At the top, a SQL query is entered: `13 Select * from staff`. Below the query bar, there are tabs for 'Data Output', 'Messages', and 'Notifications'. Under 'Data Output', there is a toolbar with icons for adding, deleting, and refreshing data. The main area displays a table with the following columns: **staff_id** [PK] integer, **username** character varying (100), **passcode** character varying (100), **lastname** character varying (100), **firstname** character varying (100), and **sec_level** integer. A single row of data is shown with the following values: 1, admin, adminpw, Ahd, Minh, and 99.

	staff_id [PK] integer	username character varying (100)	passcode character varying (100)	lastname character varying (100)	firstname character varying (100)	sec_level integer
1	1	admin	adminpw	Ahd	Minh	99

- The login table is used to keep track of the employee’s logins.

Columns

- Staff_id is an auto-incrementing value.
- Everything else is pretty self-explanatory aside from sec_level.
- Sec_level is short for security level which will determine who has access to more advanced features in the app. All staff members will be able to edit the map but those with admin security rights (99) are able to have access to everyone’s login information in case a staff member leaves and an account has to be deleted. This will be handled within the app rather than the database for security reasons but we had to store a value to say whether the user has access to this function or not.

“Showcase” table

24 `select * from showcase`

Data Output Messages Notifications

	sid [PK] integer	length_m real	width_m real	x integer	y integer	floor_no integer
1	0	0	0	0	0	0

- The showcase table is used to keep track of all the showcases (i.e., display cabinets, closets, etc.)

Columns

- Sid is an auto-incrementing value that is referred to by the item.sid column. This is used to state whether an item is in that showcase or not.
- Length_m and width_m represent the size of the showcase which will be reflected on the map.
- X, y and floor_no are all information required to display the showcase accurately on the map.

9. Meeting minutes (logs)

[14/01](#)

[24/01 and 28/01](#)

[02/02](#)

[09/02](#)

[14/02](#)

[02/03](#)

Note: There was another meeting between 14/02 and 02/03 but we didn't take meeting backlogs since that meeting is mainly for asking about the progress of the task and ensure that everything is running smoothly, and there is no task update.