

Sprint 2 Planning Document

Team 20: Virtual Closet

Team 20: Divay Gupta, Kartik Uppalapati, Maeve Tra, Meghna Rajagopalan, Oleg Aprelikov

Sprint Overview

During this sprint, we hope to complete the remaining core functionalities of the app, including the Laundry page and the recommendation algorithm. We will ask for more details from the user (personal information and preferences) in order to make this algorithm as customized as possible. We also aim to provide automatic test cases for all of the functionalities and widgets through unit tests and widget tests. Much of the written functionalities are only tested manually using the emulator with very basic test cases. This is not ideal especially if we want to make the app reliable and scalable in the future. Additionally, we are planning to start training the Artificial Intelligence to recognize different clothing items inputted by the user.

Scrum Master: Kartik Uppalapati

Meeting Plan: Thursdays @ 8:00 am up to October 27th. Thursdays @ 9:00 am onwards.

Risks and Challenges:

As for right now, the user's profile in the database is pretty basic (only contains email, name, and the closet space). Once we start asking for more input from the users, we need to figure out a better organization of data within the database so that we can update and retrieve data as fast and as reliably as possible. Moreover, security is also a problem we need to take care of, especially if we want to store the user's personal information in the database. One other challenge could be writing the unit test using Flutter's Mockito package to test Firebase functions because it requires an initialization of a Firebase app within the test file and we had trouble figuring out how to achieve that last sprint.

Current Sprint Details

User Story #1

As a user, I would like to be able to login and manage my account.

#	Description	Estimated Time	Owner
1	Set up a data stream to retrieve user's information from the database	1.5 hours	Meghna
2	Parse the data if necessary and display them on the account page	1 hour	Meghna
3	Create a button/buttons to allow the user to edit	2 hours	Meghna
4	Create an editable form	2 hours	Meghna
5	Link the button to the database to update the new information	2 hours	Meghna
6	Debug and test	3 hours	Meghna

Acceptance Criteria

- Given that the data stream is set up correctly, the user's information displayed on the account page should match with their name and email at sign up.
- Given that the account page is set up correctly, all the textfields should remain non-editable until the user chooses to edit them. This is to make sure that the user's information doesn't get changed by accident.
- Given that the button connects the account page and the database, once the user clicks "Save", the changes should be reflected both in the database and the account page.
- Given that the user has entered invalid information, when they click the "Save" button, the changes should not be made to the database, and an error message should appear.

User Story #2

As a user, I would like to have the details of the items (color, sleeve length, etc) to be recognized by an Artificial intelligence and filled out automatically.

#	Description	Estimated Time	Owner
1	Do research on how to train a Google Cloud Vision AI and connect it to the app (possibly through Firebase)	2 hours	Meghna
2	Collect photos of various clothing items to train the AI to recognize the features	7 hours	Meghna, Oleg

	of the clothing		
3	Set up the Artificial Intelligence in Google Cloud Vision	1 hour	Meghna
4	Train the AI with the photos to recognize the features of the clothing	4 hours	Meghna
5	Connect the Artificial Intelligence to our app (possible through Firebase)	2 hours	Meghna
6	Write code for the app so that once the user has taken a photo and confirmed that they want to use that photo, the app uses the Artificial Intelligence to determine the features of the clothing, and adds the results to the details page	3 hours	Meghna
7	Create an email account for the app	0.5 hours	Meghna
8	Add a button to the details page to report any mistakes that the artificial intelligence made; this sends an email to the virtual closet email	2 hours	Meghna
9	Debug and test with photos that were not from the training set	2 hours	Meghna

Acceptance Criteria

- Given that the user has taken a photo of an item of clothing and specified the type of clothing, when the user has confirmed they want to use that photo, then the artificial intelligence should process the photo and determine the recognizable features of the clothing (color, sleeve length, etc) with at least 70% accuracy
- Given that the user has taken a photo of something that is not an item of clothing, when the user confirms they want to use that photo, then the artificial intelligence should process the photo, recognize that the photo does not contain an item of clothing, and display a message telling the user “No clothing item found”
- Given that the artificial intelligence has processed a photo of a valid clothing item, and determined a feature incorrectly, when the user presses the “Report error” button on the details page, then the app should take them to a screen on which they can report a mistake the AI made in determining a particular feature, and an email will be sent to the virtual closet email

User Story #3

As a user, I would like to be able to see what items are in the “Laundry basket” (looks similar to seeing what clothes are in the main closet)

#	Description	Estimated Time	Owner
1	Filter the closet page to “In laundry” items only	3 hours	Kartik
2	Display the filtered closet page on the laundry page	3 hours	Kartik
3	Debug and test	2 hours	Kartik

Acceptance Criteria

- Given that the laundry page is set up correctly as a filtered closet page instead of a new page by itself, any changes in the closet page should be reflected in the laundry (whenever applicable).
- Given that the filter methods work correctly, only items that are in the laundry will be shown on the laundry page.
- Given that the laundry page is opened on the user’s screen, when the user taps on a specific clothing item, then the app should open the details page for that clothing item.

User Story #4

As a user, I would like to be able to add items to the “Laundry basket” using a toggle on the details page of that specific clothing item

#	Description	Estimated Time	Owner
1	Add a toggle on the details page	1 hour	Divay
2	Add conditions for the toggle so that once it’s clicked, the “In laundry” field of the item is updated	4 hours	Divay
3	Make sure the change is updated in all related components — database, closet, laundry	4 hours	Divay
5	Debug and test	3 hours	Divay

Acceptance Criteria

- Given that the toggle updates in the “In laundry” field of the item, once the user clicks on the toggle, only the “In laundry” field is updated and not any other field.
- Given that the toggle is set up correctly, it should trigger an update in the database, which subsequently will trigger updates in all related components.
- Given that the user uses the toggle to add an item to the laundry basket, when they open the laundry basket, then that item should appear on the screen.

- Given that the user uses the toggle to remove an item from the laundry basket, when they open the laundry basket, then that item should no longer appear on the screen.

User Story #5

As a user, I would like to be able to receive new recommendations if I decline the old one.

#	Description	Estimated Time	Owner
1	Detect if the old recommendation is declined	1 hour	Maeve
2	Check if the recommendation queue is empty and dequeue the first one if not	2 hours	Maeve
3	Reload the algorithm for a new recommendation queue if empty	3 hours	Maeve
4	Make sure items are not repeated	2 hours	Maeve
5	Debug and test	3 hours	Maeve

Acceptance Criteria

- Given that the conditions are set up correctly, the algorithm should only reload when the queue is empty.
- Given that the reload method is set up correctly, when a new queue is loaded, it should not contain any item from the last one.
- Given that the algorithm properly checks for repeated items, once all the options are exhausted (no more items to be recommended), a notification should pop up to let the user know.

User Story #6

As a user, I would like to be able to clear all items from the “Laundry basket” at once.

#	Description	Estimated Time	Owner
1	Create a “Clear All” button on top of the laundry page	30 minutes	Divay
2	Add a confirmation dialog before clearing all	1 hour	Divay
3	Get all items that are in laundry and mark their “In laundry” field as false	2 hours	Divay
4	Make sure the update is reflected in all related components - database, closet, detail page, laundry.	2 hours	Divay

5	Debug and test	3 hours	Divay
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Acceptance Criteria

- Given that the “Clear All” button is set up correctly, once the user chooses to clear all, a confirmation dialog should pop up.
- Given that the “clear all” method works correctly, once the user chooses “confirm” from the dialog, all items with the “In laundry: true” should be set to “false”.
- Given that the update is reflected in the database, once the “In laundry” field changes, it will update the changes in all related components.

Sprint 1 - Incomplete User Stories, Tasks, & Acceptance Criteria

User Story #5

As a user, I would like to be able to view all my items in the closet, under a specific category in the closet (tops, bottoms, hats, shoes, etc).

#	Description	Estimated Time	Owner
1	Make tabs at the top of the screen to sort the clothes (tops, bottoms, hats, shoes, etc)	3 hours	Oleg
2	Program the app to display only those clothes that are in the selected category (based on the selected tab)	2 hours	Oleg
3	Program the app to display a message (as a label where the grid-view is) if any of the categories have no clothes in that category in the database. The message should say “No results found.”	2 hours	Oleg
4	Debug and test	3 hours	Oleg

Acceptance Criteria

- Given that the user has entered clothes into the database, when they open their closet, Then the page should display a gridview of their clothes, with each square containing a picture of the clothing item and the name of the clothing item
- Given that the user has entered the correct category of clothing for each item in the database, When they select a tab on the closet page, Then the page should display a gridview of exactly those clothes that fall in that category

- Given that the user has not entered any clothes into the database for a specific category, When they open their closet and select that tab, Then the page should display a message saying that no results were found
- Given that the user has opened the closet page, When they select a specific square in the grid-view, Then the non-editable details page should open for that specific clothing item.

User Story #7

As a user, I would like to be able to search for an item using the search bar.

#	Description	Estimated Time	Owner
1	Add a text box to the closet page, above the grid-view. This is the search box.	2 hours	Kartik
2	Add a search button next to the text box.	1 hour	Kartik
3	Program the search button so that when it is pressed, if the search box is non-empty, it should make a request to the database for the user's clothes and only display the results that include in their name or details the word(s) that the user typed in the search box	4 hours	Kartik
4	Program the grid-view to reload with the new results whenever the user clicks the search button (and the search box is non-empty)	1 hour	Kartik
5	Program the page so that if for the selected category (based on tab selected) none of the results match what the user typed in, then the grid-view should be invisible, and a label (uneditable text) should display no results found	2 hours	Kartik
6	Debug and test with unit test	3 hours	Kartik

Acceptance Criteria

- Given that the user has entered text in the search box, When they click the search button, Then the grid view should reload to display exactly the clothing items that contain the text entered by the user in the name or details of the item
- Given that the user has not entered text in the search box, When they click the search button, Then the grid-view should not reload and instead remain unchanged

- Given that the user has entered text in the search box that is not included in any of the clothing items for the selected category (based on tab selected), then the grid-view should become invisible and the message “No results found” should be displayed.

User Story #9

As a user, I would like to receive recommendations on what to wear based on my Google Calendar.

#	Description	Estimated Time	Owner
1	Add to the user registration process: request user to allow app to access their Google calendar	1 hour	Kartik
2	Connect the app to the user's Google calendar (only if user has allowed access)	2 hours	Kartik
3	Program access to the user's calendar for the next 7 days. This access should take place at midnight every day.	2 hours	Kartik
4	Store this data in a variable that can be accessed by the recommendation algorithm as well as the laundry page	1 hour	Kartik
5	Create a button so that the user can press it to trigger updating the calendar information to the latest information.	1 hour	Kartik
6	Debug and test with unit test	2 hour	Kartik

Acceptance Criteria

- Given that the user has clicked the sign-up button and entered their Google account details, once the Google Account has been verified, the app should request access to the user's Google Calendar.
- Given that the user has allowed the app to access the user's Google Calendar, When the time is 12:00am, Then the app should request the Calendar data from the user's Google Calendar for the next 7 days.
- Given that the user has allowed the app to access the user's Google Calendar, When the user clicks on the Update Calendar button, Then the app should request the Calendar data from the user's Google Calendar for the next 7 days.
- Given that the user has allowed the app to access the user's Google Calendar, When the user's calendar info has been requested for the next 7 days, Then the obtained calendar info should be correct information for the next 7 days.

Given that the user has allowed the app to access the user's Google Calendar, When the user's calendar info has been requested for the next 7 days, Then the obtained calendar info should be accessible from all the necessary classes in the app.

User Story #10

As a user, I would like to be able to receive recommendations on what to wear

#	Description	Estimated Time	Owner
1	Let the user decide on how many outfit recommendations they want, (tbd), per day and at what time	2 hours	Maeve
2	Pull in weather information and based weather filter recommended clothes set accordingly (if it's raining don't include shorts in clothes to recommend)	3 hours	Maeve
3	Pull in daily event information from google calendar (if user allows it and has google calendar set up) and recommend clothes based on user's events	3 hours	Maeve
4	Find similar items between both recommendations and put them in a priority queue.	4 hours	Maeve
5	Display the recommendations	1 hour	Maeve
6	Debug and test with unit test	3 hours	Maeve

Acceptance Criteria

- Given that the user allows the app to use the current location which is needed for the weather API, the user's google account is verified, and their google calendar isn't empty the recommendation algorithm should suggest an outfit for the user.
- Given that the user does not allow the app to know the user's current location and the user does not have a google account or does not use google calendar, the recommendation algorithm should suggest an outfit for the user based on time of day.
- Given that the user allows the app to give notifications, a notification should be given every time an outfit recommendation has been made.
- Given that there are available clothes in the closet for an outfit to be made and the recommendation quota has not been satisfied yet, make an outfit recommendation at the user's preset time.

User Story #12

As a user, I would like to be able to approve or decline the recommendations

#	Description	Estimated Time	Owner
1	Let user swipe left or right on each part of the outfit (left for reject and right for accept)	2 hours	Maeve
2	Send signal to that the recommendation is declined if the user swipes left	1 hour	Maeve
3	If the user swipes right, ask if the user wants to add it to laundry	2 hours	Maeve
4	Debug and test	2 hours	Maeve

Acceptance Criteria

- Given that the user has set at least one outfit recommendation per day, the homepage should display an outfit in its individual parts at the user's preset time of day
- Given that the user swipes left on a piece of clothing in the outfit recommendation, replace it with a new clothing recommendation. If all the clothes in that category are in the laundry, then play a mini shake animation on the clothing piece to signify there is nothing else to recommend.
- Given that the user swipes right on a piece of clothing in the outfit recommendation, then increase that item's recommendation probability by a multiplier of 1.15

User Story #13

As a user, I would like to be able to select a clothing item in the closet and see if it is in the "Laundry basket" or not on the item's details page

#	Description	Estimated Time	Owner
1	Add a tag or note in the non-editable details page that says "In laundry basket"	1 hour	Divay
2	Debug and test with unit test	1 hour	Divay

Acceptance Criteria

- Given that the user or app has moved an existing clothing item into the laundry basket, when they click on the clothing item, it displays the status of the clothing item accurately.
- Given that the user or app has moved an existing clothing item into the laundry basket, when they click on the clothing item, display the status text for "In Laundry Basket" in an aesthetically pleasing box or tag format.

- Given that the user or app has moved an existing clothing item into the laundry basket, when the non-editable page for that item is open, the app should take them to the editable details page.

User Story #14

As a user, I would like to be able to remove items from the “Laundry basket” using a toggle on the details page of that specific clothing item

#	Description	Estimated Time	Owner
1	Create toggle to change Laundry basket status of clothing item on the editable details page	1.5 hours	Divay
2	Animate toggle when the user clicks on it	1 hour	Divay
2	Update the information for the clothing item from database	2 hours	Divay
3	Display the updated information for the clothing item from database	1.5 hours	Divay
4	Debug and test with unit test	1 hour	Divay

Acceptance Criteria

- Given that the user or app has clicked on a clothing item, when they click the edit button on the non-editable details page, display the item's status in the database appropriately.
- Given that the user has clicked on a clothing item, when they click the edit button on the non-editable details page, display the laundry basket status toggle in an aesthetically pleasing way.
- Given that the user has clicked on a clothing item, when the toggle on the editable page for that item is clicked, animate the toggle appropriately.
- Given that the user has clicked on the toggle for a clothing item, when the save button on the editable page for that item is clicked, update the laundry status for the item in the database as needed.

User Story #15

As a user, I would like to be able to filter the items based on their colors, materials, etc.

#	Description	Estimated Time	Owner
1	When a search bar is present, display a list of dropdown menus that can filter based on any available clothing detail	4 hours	Oleg

2	Only display items that have the required details	1 hour	Oleg
3	Additionally, if the search bar contains one of the colors, materials, etc... display any items that match those details	2 hours	Oleg
4	Save the search results in case the user clicks away from the closet and comes back	3 hours	Oleg
5	Debug and test with unit test	3 hour	Oleg

Acceptance Criteria

- Given that the user has selected particular details while searching for an item, display only the items that satisfy both the search terms and the details selected.
- Given that the user has searched for terms like 'red' or 'cotton', display any results that have all of the search terms as one of their details.
- Given that the user has clicked away from the closet to any other page in the app, and then clicked back on the closet, correctly display either the previous search result or the correct tab depending on where the user has previously left off.

Remaining Backlog

Functional Requirements

User account

- ~~1. As a user, I would like to be able to register an account using my Google account (gmail).~~
- ~~2. As a user, I would like to be able to login and manage my account.~~
- ~~3. As a user, I would like to be able to reset my password.~~
- ~~4. As a user, I would like to be able to sync my Google calendar with the app.~~

Managing closet

- ~~5. As a user, I would like to be able to add clothing items to my closet~~
- ~~6. As a user, I would like to be able to remove clothing items~~
- ~~7. As a user, I would like to be able to select a specific clothing item and see the details for that item on a details page~~
- ~~8. As a user, I would like to be able to edit details of all my clothing items.~~
- ~~9. As a user, I would like to be able to open my phone's camera from the app and take pictures of my clothes to add them to the closet.~~
- ~~10. As a user, I would also like the option to upload photos from my phone's gallery.~~

- ~~11. As a user, I would like to have the details of the items (color, sleeve length, etc) to be recognized by an Artificial intelligence and filled out automatically.~~
12. As a user, I would like to be able to edit any details that were recognized incorrectly by the Artificial Intelligence, and also report that the mistake was made.
- ~~13. As a user, I would like to be able to view all my items in the closet, under a specific category in the closet (tops, bottoms, hats, shoes, etc).~~
- ~~14. As a user, I would like to be able to search for an item using the search bar.~~
- ~~15. As a user, I would like to be able to filter the items based on their colors, materials, etc.~~
16. As a user, I would like to extract my item from its original background and put it on a custom background (if time allows).

Clothing Recommendations

- ~~17. As a user, I would like to receive recommendations on what to wear based on the weather~~
- ~~18. As a user, I would like to receive recommendations on what to wear based on my schedule in my Google calendar.~~
- ~~19. As a user, I would like to receive recommendations for one type of clothing item (tops, bottoms, shoes, hats, etc) at a time.~~
20. As a user, I would also like to receive full outfit combination recommendations if I choose the option to allow it (if time allows)
- ~~21. As a user, I would like to be able to approve or decline the recommendations.~~
- ~~22. As a user, I would like to be able to receive new recommendations if I decline the old one.~~
23. As a user, I would like the clothing item to be automatically put in the "Laundry basket" after I have accepted it.
24. As a user, I would like to be able to say that an item is my favorite so that it is recommended more often.

Outfit Combinations

25. As a user, I would like to be able to mix and match items in my closet to create outfit combinations.
26. As a user, I would like to be able to save an outfit combination that I like.
27. As a user, I would like to be able to browse my saved outfit combinations.
28. As a user, I would like to be able to edit a saved outfit combination.
29. As a user, I would like to be able to delete a saved outfit combination.
30. As a user, I would like to be able to name a saved outfit combination.
31. As a user, I would like to be able to search for a saved combination using its name.
32. As a user, I would like to be able to upload a picture of myself and then see the clothing items modelled on the picture. (if time allows)
33. As a user, I would like to be able to assign an outfit combination for a specific date.
34. As a user, I would like to be able to set weather preferences for a specific outfit combination so that the app recommends that outfit on a day with that weather (if time allows)

Laundry

- ~~35. As a user, I would like to be able to select a clothing item in the closet and see if it is in the "Laundry basket" or not on the item's details page~~
- ~~36. As a user, I would like to be able to see what items are in the "Laundry basket" (looks similar to seeing what clothes are in the main closet)~~
- ~~37. As a user, I would like to be able to select a clothing item in the "Laundry basket" and see its details on a details page.~~
- ~~38. As a user, I would like to be able to add items to the "Laundry basket" using a toggle on the details page of that specific clothing item~~
- ~~39. As a user, I would like to be able to remove items from the "Laundry basket" using a toggle on the details page of that specific clothing item~~
- ~~40. As a user, I would like to be able to clear all items from the "Laundry basket" at once.~~
- ~~41. As a user, I would like to be able to tell if an item is in the "Laundry basket" from the main closet.~~
- 42. As a user, I would like to be able to set how often I want to do my laundry.
- 43. As a user, I would like to be reminded to wash an item if it is still in the "Laundry basket" (the reminder is sent periodically, with the time period being the user-selected time for how often they want to do laundry; default is 1 week)
- 44. As a user, I would like to be reminded to wash an item if I need the item for an upcoming event, or if the outfit has been assigned to an upcoming date.
- 45. As a user, I would like to be able to set how far ahead I want to be reminded to do my laundry.
- 46. As a user, I would like to be reminded to do laundry if my last laundry load exceeds the duration set above (i.e. if I want to do laundry every week, remind me if I haven't done it on the 8th day).
- 47. As a user, I would like to receive notifications from the app to do laundry.
- 48. As a user, I would like to see the last time a clothing item was washed on its details page (if time allows)
- 49. As a user, I would like to set reminders for washing a specific item for a specific time period that might be different from the normal laundry time period (example, for jackets that are not washed as often) (if time allows)