Serenova

Sprint 1 Retrospective Document

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#	Task Description	Estimated Time	Owner
User Story #1: As a user, I would like to be able to create a unique login username and password to keep my own personal information safe and secure.			
1	Create UI Page to allow users to sign up for an account	4hr	Ava
2	Set Up Firebase Database	2hr	Cristina
3	Link Database to the App	3hr	Cristina
4	Setting up database logic and validating the request	1hr	Cristina
5	Creating a User Class and inputting user information in it	2hr	Caitlin
6	Add unit tests for Registration	3hr (each person assigned)	Isha
User Story #2: As a user, I would like to be able to log into the account I've created.			
7	Create UI Page that allow users to log in for an account	4hr	Kara
8	Authenticating the parameters with Firebase	2hr	Cristina
9	Handling routing from the login page to the homepage or questionnaire for first time users	3hr	Isha
10	Handling obtaining user's personal details after successful login and validating request	5hr	Cristina
11	Add unit tests for log in	4hr (each person assigned)	Isha
User Story #3:			

As a user, I would like to be able to manage my account and take actions such as changing my password, deleting my account, and changing my username.			
12	Create a UI Page that allows users to change their account details or delete their account.	5hr	Kara
13	Handling backend logic to connect with the database when the user changes their information.	2hr	Kara
14	Handle backend logic to make sure the new desired username doesn't already exist in the database if the user decides to change their username	1hr	Caitlin
15	Add unit tests to check functionality	4hr (each person assigned)	Caitlin
User Story #4: As a user, I would like to be able to reset my password if I am not currently logged in.			
16	Create UI Page for Resetting Password	2hrs	Isha
17	Handling routing from the login page to the reset password page when clicked	3hrs	Mary
18	Handling backend logic to connect with the database when the user changes their password	4hrs	Mary
19	Handle logic to incorporate email verification code sent to user to verify their account	4hrs	Isha
20	Add unit tests to check functionality	4hrs (each person assigned)	Isha, Mary
User Story #5: As a user, I would like to be able to view my account profile, which displays content including my app settings and login information.			
21	Create a UI page template that displays a user's account information.	2hrs	Kara

22	Handle backend logic to access a user's past data and display it properly on the UI	2hrs	Caitlin
23	Handle backend logic to get a user's app settings and connect it to be displayed properly on the UI	2hrs	Caitlin
24	Handle backend logic to get a user's login information	2hrs	Caitlin
25	Add unit tests to check functionality	4 hrs (each person assigned)	Caitlin
User Story #6: As a user, I would like to be able to change the app appearance through different background colors available for me through the account page.			
26	Create a UI page template that allows a user to change their profile preferences.	2hrs	Kara
27	Create color UI dropdown menu	1hr	Kara
28	Determine color from dropdown menu	1hr	Kara
User Story #7: As a user I would like to be able to upload or change a profile picture so that I can be recognized as my picture to my friends.			
29	Make the Manage Account UI Page to incorporate adding and changing a profile picture	3hr	Isha
30	Create an algorithm for image picker	3hr	Caitlin
31	Create an algorithm to convert the image the user uploads to a bitmap	4hr	Caitlin
32	Replace the older profile picture's bitmap from firebase with the new profile picture's bitmap	3hr	Isha, Mary
33	Connect the database and the image the user uploads	3hr	Isha, Mary

34	Add unit tests to check functionality	4hr (each person assigned)	Isha
User Story #8: As a user who owns a smart watch, I would like to automatically sync my device with the app so that I can track my sleep duration, quality and patterns.			
35	Create device syncing	1hr	Ava
36	Enable Apple HealthKit capabilities for application in Xcode and configure HealthKit access	1hr	Kara
37	Create HealthKit Store (instantiate an HKHealthStore object)	1hr	Ava
38	Provide custom messages for the Health permissions sheet in HK NSHealthShareUsageDescription and NSHealthShareUsageDescription	1hr	Ava
39	Request user's permission to read and write data in HealthKitStore	2hr	Ava
40	Add unit tests for device syncing/data gathering	3hrs	Ava
User Story #9: As a user, I would like to be able to manually log my sleep times.			
41	Create Sleep Log UI with option to manually start sleep session	3 hrs	Ava
42	Prompt HealthKit API to record sleep sample and generate HK sleep samples	2hrs	Ava
43	Send User's sleep data sample to Firebase Realtime Database	1 hr	Ava
44	Add unit tests for device syncing/data gathering	3hrs	Ava
User Story #10:			

As a user, I would like a page that shows me a graph detailing how much sleep I got each day over the past month.			
45	Create a UI page for displaying sleep frequency graphs by month.	4 hrs	Kara
46	Construct a custom chart template using Swift Charts that can integrate sleep log data and display it.	2 hrs	Kara
47	Add unit tests for sleep log data accuracy and validation, as well as other UI unit tests.	3hrs	Isha
User Story #11: I would like to be able to set sleep duration goals.			
48	Create a UI page for viewing sleep duration goals.	1hr	Ava
49	Create a UI page for viewing current progress on sleep duration goals.	1hr	Ava
50	Handle backend to save user sleep goals.	2hr	Mary
51	Handle backend logic that will retrieve user sleep goals.	2hr	Mary
User Story #12: I would like to have an alarm that can wake me up during my lightest sleep phase every morning.			
52	Create UI where user can input their wake up times	1hr	Caitlin
53	Connect to database to check heart rate throughout the night	2hrs	Caitlin
54	Connect to database to check for signs of light sleep, such as a slowing heart rate	2hrs	Caitlin
55	Create UI to pull up alarm and play sound until user presses a button to shut it off	2hrs	Caitlin

56	Create Unit Tests	3hrs	Caitlin
User Story #13: As a user, I would like to receive a reminder to wind down and begin my bedtime routine every night based on my desired and recommended sleep schedule each day.			
57	Create UI for user to input their desired sleep schedule each day	2 hrs	Isha
58	Create a UI iOS push notification	3 hrs	Kara
59	Connect to database and determine when to send push notification to the user	3 hrs	Kara
60	Add unit tests for device syncing/data gathering	3hrs	Isha
User Story #14: As a user, I would like to be able to create posts for a forum so that I can share and receive sleep experiences, tips and advice about sleep-related topics on this forum.			
61	Create a new UI “post page” to act as a template for a user making a post in the forum. The post should include the author, the date, and other relevant information.	2 hrs	Ava
62	Create a UI component for the post title and the post content that allows a user to edit it.	2 hr	Ava
63	Create a submit/post button.	1 hr	Cristina
64	On error, create a detailed error message for the user.	1 hr	Cristina
65	Handle backend logic that will create a Post object for the user’s post.	1 hr	Cristina
66	Work with Firebase to save the new Post object so that it is accessible to other users.	1 hr	Cristina
67	Add UI unit tests and unit tests for the Post Object functionality. Focus on how it is stored in the database.	3 hrs	Isha

User Story #15: As a user, I would like to be able to view posts for a forum so that I can receive sleep experiences, tips, advice, and engage in discussions on sleep-related topics.			
68	Create a new UI for the given forum to display various posts for the user in order of date.	2 hrs	Cristina
69	Create a button to allow users to start creating posts.	1 hr	Cristina
70	Create a clickable UI component for each post to be displayed on the UI, including the name of the post, the author, and other relevant information.	2 hr	Cristina
71	Create a UI button that will allow users to start searching the forum.	1 hr	Cristina
72	Handle backend logic to retrieve X number of posts from the database to display for the user.	3 hr	Cristina
73	Add unit tests for	2 hrs (each person assigned)	Cristina

What Went Well in Sprint 1?

One thing that went well in Sprint 1 was that there was very little interruption of workflow among the group. There were very few instances where one group member couldn't work until some other parts of the project were functional. Even when it did occur, each member generally had an alternative task that they could work on instead of just waiting with nothing to do.

Another successful aspect of Sprint 1 was the level of communication in the group. All group members have been responsive in online communication, and, when a meeting is set, every group member has always shown up. During meetings, the group collectively worked on the project, such as discussing bugs in the code or writing sprint documents. Each member has also effectively set expectations for what work they will complete and by when (if necessary).

Additionally, the UI outlined in the Planning Document's user stories and the classes covered in the Design Document were developed quickly at the beginning of the sprint. The database, Firebase, was set up almost immediately during the sprint as well. This means that we were able to begin backend work quickly too. For example, we were able to finish the UI for the first user story quickly, which made it easier to set up the Firebase and begin working on backend functions dealing with user account information. If the development of the UI, classes, and database took a longer time, we would not have been able to work on as much for as long as we did.

Completed:

User Story #1: As a user, I would like to be able to create a unique login username and password to keep my own personal information safe and secure.			
1	Create UI Page to allow users to sign up for an account	4hr	Ava
2	Set Up Firebase Database	2hr	Cristina
3	Link Database to the App	3hr	Cristina
4	Setting up database logic and validating the request	1hr	Cristina

5	Creating a User Class and inputting user information in it	2hr	Caitlin
6	Add unit tests for Registration	3hr (each person assigned)	Isha

Completed: #1, 2, 3, 4, 5, 6: We were able to set up the UI page for sign up quickly, which gave us a good starting point to build the rest of the project off of. We were also able to set up the firebase database and link it to our app to store information. This will aid us in testing the app further in development as well as ensuring we have a secure way to store user information.

What Did Not Go Well in Sprint 1?

Overall, most tasks that we were unable to finish were because we underestimated the hours needed to complete it. Since this was our first sprint, we didn't have a lot of experience with judging a user story's difficult level. While we finished the vast majority of the features given in the Planning Document, we also had to alter the document towards the end of the sprint when we realized some of the remaining elements would take too much time. However, since we now have more familiarity with swift and the Xcode IDE, we anticipate being able to better predict the amount of time we will need to implement each user story in the future.

Additionally, most group members did not have much experience with the particular programming language (Swift) and database (Firebase) incorporated in this project. There was a steep learning curve at the beginning of the sprint, which led to user stories taking longer than expected, simply because of an unfamiliarity with the tools being used. Due to this, it was necessary to do a lot of research on how to work with Swift and Firebase, which also took up much of our time.

Furthermore, because we spent more time than anticipated on some features, from both overestimation and inexperience, we couldn't spend as much time on others. The tasks that were sacrificed were often the test cases for the user stories. Although most features are functional, they were not all tested thoroughly.

Also, there were some issues with our version control and IDE during the sprint. One problem was that Xcode had trouble connecting to our github, making it difficult to commit and pull changes to the central repository. Another problem was that occasionally, when committing changes to the repository, the work on local devices was replaced with the content from the repository instead of merged. This happened to multiple group members and required more time invested into the user story than what would have been necessary.

Lastly, there are two group members that do not have easy access to a computer with MacOS. This makes working on the project more difficult, as iOS development is easiest with IDEs like XCode which are not compatible with PCs. Producing functional code while logging an appropriate amount of hours is not as easy as for some members, which should be reflected in the tasks that are assigned.

User Story #6: As a user, I would like to be able to change the app appearance through different background colors available for me through the account page.			
4	Alter all UI color to be the dropdown color	2hrs	Kara
5	Add unit tests to check functionality	4hrs (each person assigned)	Kara

Not Complete: #: All UI was implemented for this user story, but as we continued to work on the app, we decided that this should be one of the last things implemented. We would need to create full color schemes that each page can pull from and accurately mix color schemes together. It looked to be a lot more planning than we expected.

User Story #9: As a user, I would like to be able to manually log my sleep times.			
3	Send User's sleep data sample to Firebase Realtime Database	1 hr	Ava
4	Create push notification for session termination	1 hr	Ava

Not Complete: #3:. Currently all data is being queried directly from the HKStore. This was mainly because of inexperience in using both HealthKit and Firebase, and integrating the two. The next step will be determining if handling HK data via background querying and sending all queried data to Firebase is the best option.

Not Complete: #4: Considering options currently. Implementation is ready, but an Apple Developer account is needed to add a key to the project to enable any push notifications.

User Story #10:

As a user, I would like a page that shows me a graph detailing how much sleep I got each day over the past month.			
3	Handle backend logic that will query the database for the user's sleep logs by the specified month.	1 hr	Cristina
4	Develop an algorithm to calculate the total amount of sleep the user got per day of the specified month. This is necessary if there can be multiple sleep logs per day.	2 hr	Cristina
5	Handle backend logic that will work with Swift Charts to plot the data for display.	1 hr	Cristina

Not completed #3,4,5: By the end of Sprint #1, we had not yet been able to store the user's log information in Firebase to make it available for querying. For Sprint #2, as we start to load the information into Firebase, we will be able to start loading in sleep log information to display in graphs on the Sleep Display Graphs page.

User Story #11: I would like to be able to set sleep duration goals.			
50	Handle backend to save user sleep goals.	2hr	Mary
51	Handle backend logic that will retrieve user sleep goals.	2hr	Mary

Not Complete #50, 51: The code was written for these features, however, there wasn't enough time to run it and check that it works. More time was spent on a task that took longer to complete than expected, and the code could only be tested on a MacOS computer, which this member does not have.

User Story #12:

I would like to have an alarm that can wake me up during my lightest sleep phase every morning.			
53	Connect to database to check heart rate throughout the night	2hrs	Caitlin
54	Connect to database to check for signs of light sleep, such as a slowing heart rate	2hrs	Caitlin
55	Create UI to pull up alarm and play sound until user presses a button to shut it off	2hrs	Caitlin

Not Complete: #54, 55: Code was partially written for these features. However, there wasn't enough time to verify that the methods being used would work, so code was not pushed to the github repository. The code could only be tested on a MacOS computer, which this member does not have.

User Story #13: As a user, I would like to receive a reminder to wind down and begin my bedtime routine every night based on my desired and recommended sleep schedule each day.			
58	Create a UI iOS push notification	3 hrs	Kara
59	Connect to database and determine when to send push notification to the user	3 hrs	Kara
60	Add unit tests for device syncing/data gathering	3hrs	Isha

Not Complete #60: KARA: We discovered that we could not implement push notifications without an Apple iOS Developer account key. Once this is obtained, all implementation for push notifications is set up. ISHA: Due to the push notifications not being implemented yet, I felt like it would not make sense to add tests for this story as not all of the pieces are complete yet. I have a base on UI Tests, but as for syncing/data gathering, all the backend needs to be implemented first before I can write tests.

User Story #15: As a user, I would like to be able to view posts for a forum so that I can receive sleep experiences, tips, advice, and engage in discussions on sleep-related topics.			
6	Add unit tests	2 hrs (each person assigned)	Cristina

Not completed #6: I was able to implement the rest of the user story: the user interface and the query function. However, while trying to implement it, I realized that there was more to creating a forum page than just querying X posts and displaying them. There is a refresh feature and an infinite scroll feature. Since these were not completely implemented, and the connection with Firebase is a little buggy, I opted to not do the unit tests until the page was completely finished. These tests should be done by the end of Sprint #2. Also, until the individual post UIs are created, these acceptance criteria were pushed to Sprint #2:

- Given that the “search” button is implemented correctly, when a user clicks the “search” button, they should be redirected to a page for searching the forum.
- Given that the UI component for each individual thread is implemented correctly, when a user goes to click the thread, they should be redirected to a page where the entire post content, as well as the ongoing discussions, are viewable (implementation of the separate page will be another user story).

How Should We Improve?

One area of improvement for us is having a better gauge of how long user stories will take. Now that we have completed the first sprint, we should have an easier time correctly estimating the hours needed to complete each feature. We are also far more familiar with Swift and Firebase as well as how they work together; it is not necessary during the next sprint to learn the basics of these tools, as was the case with this sprint. With both of these problems minimized, this means there should be less of a time crunch towards the end of the sprint, less modifications will be made to the original planning document, and more tasks overall will be able to be completed.

Additionally, we also have more experience with the version control system, so it is easier to avoid the issues we encountered during this sprint. Also, even if the previous errors occur again, we have now learned some helpful techniques to work around them. One example is, if local changes are deleted, we know more about how to navigate stashes to recover the code that was lost. This will obviously allow us to not waste time amending the error and, instead, be able to work on the application.

Regarding the members that don't have access to an IDE that can run the app, we plan to split user stories in such a way that these members work together with a member that does have a MacOS computer. This makes it easier for them to work on features, as they can simply work jointly with another group member to complete a task. Since we believe our communication in this sprint "went well," this should be easy to implement.

Overall, as outlined above, we have made several plans to improve our efficiency in the next sprint. Now, we will be able to spend more time, given that it won't be lost to as many obstacles as in the first sprint, on constructing the application. While we expect the second sprint to have its own challenges, solutions to this sprint's problems have been applied.