Sprint 2 Planning Document
Alarm^2

Team 20
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Sprint Overview

This sprint focuses on completing unfinished user stories from Sprint 1 and implementing the basic functionality of the group and location based alarms. Additionally, we want to have a stronger emphasis on putting all of the pieces together into one application instead of split among developers.

Scrum Master: Kalpan Jasani

Meeting Plan: Monday, Wednesday, Friday 11:30-12:20

Risks and Challenges:

- One major challenge will be connecting all of our individual work into one project. We had troubles merging code in Sprint 1 and are concerned we may run into similar issues this sprint. This is because of trouble collaborating on work done on Android Studio.

- Another challenge will be learning how to communicate through the server. While it has been created and works with test cases, we have yet to actively send data from Android Studios/Phone to the server and vice versa, so there will be a learning curve.

- In regards to these challenges, and considering our initial learning curve has gone well, this sprint is more challenging than Sprint 1 but we think it is within our abilities to complete.

Front end will build off of Sprint 1 and continue to develop screens that are efficient and fit to any phone. Back end will be doing a combination of retooling code from Sprint 1 and implementing new features, API, and server connections.

Total Hours: Ashwin - 36 hrs
Kalpan - 31 hrs
John - 34 hrs
Scott - 35 hrs

Team descriptions:

Team	Description
Front End	Making the graphical user interface of the phone application
Back End	Unless otherwise stated, Back End is the team for providing the action in the phone
Server	This team is responsible for managing the server's aspects
Test	This team is responsible for testing the implementations

User Story #1: As a user, I would like to set an alarm based on time, so that I can be woken like how traditional alarms wake us up

#	Description	Time	Team	Owner
1	Pull in default ringtones from OS	1 hrs	Front	Kalpan
2	Set up storage of alarms on local storage	4 hrs	Back	Kalpan
3	Read alarms from phone when app starts after restart of phone	2 hrs	Back	Kalpan
4	Update to server	3 hrs	Back	Kalpan
5	Have option to select a custom ringtone	1	Front	Kalpan
5	Testing	2 hrs	Test	Scott

Acceptance Criteria:

- Given that the GUI for creating an alarm is functional, when selecting the option of setting a ringtone, the default ringtones of the phone would be available from which one is selected.
- Given that alarms can be created, when alarms are created/modified, they should be stored on local storage, such that they can be retrieved after an application is killed.
- Given that alarms are created, when alarms are created or modified, they should update on the server.
- Given that we can create/modify an alarm, when the user indicates desire to set a ringtone, there should be a display of the custom ringtones

User Story #2: As a user, I would like to be able to easily view all my alarms so that I can conveniently check and update them

#	Description	Time	Team	Owner
1	Design Icons/Theme	2 hrs	Front	Ashwin
2	Read from Background to display alarms	1 hrs	Front	Ashwin
4	Design GUI for editing existing alarms	2 hrs	Front	Ashwin
5	Write logic for updating existing alarms	2 hrs	Back	Ashwin
6	Update on local storage	3 hrs	Back	Kalpan
7	Testing	2 hrs	Test	Scott

Acceptance Criteria:

- Given that the UI is correctly connected with the app's client side database, when a user opens the app, then a list of all the user's current alarms will be displayed on the default homepage.
- Given that the UI is correctly implemented, when a user taps an existing alarm, then the alarm edit page is displayed with the current settings that can be edited.
- Given that the controller is correctly implemented, when a user submits changes to an alarm, then the settings will be updated in the client side database, as well as the server side database if the alarm is a group alarm

User Story #3: As a user, I would like to set a custom ringtone

#	Description	Time	Team	Owner
1	Set up GUI in the settings menu for adding ringtones	2 hrs	Front	Kalpan
2	Select file and store its file path	2 hrs	Back	Kalpan
3	Update list on local storage	2 hrs	Back	Kalpan
3	Testing	1 hrs	Test	Scott

Acceptance Criteria:

- Given that there exists a screen for updating or creating an alarm, when the user indicates selection of a custom ringtones, the previously set custom ringtones should show.
- Given that there is an option in settings screen to change custom ringtones, when selecting the option of selecting a new ringtone, there should be a screen from which the user can select songs from the phone's storage.
- Given that there is an option in settings screen to change custom ringtones, there should be a list containing the previously set custom ringtones.
- Given that user can select new custom ringtones, when the user creates a new ringtone or edits one, the local storage should be updated.

User Story #4: As a user, I would like to be able to set a contact who would be called/texted to wake me up so that in case I do not wake up or sleep past my alarm I will have a safety net

#	Description	Time	Team	Owner
1	Pull contacts	2 hrs	Back	Scott
2	Write backend logic to handle notifying contact using Twilio API or phone's services	10 hrs	Back	Scott
3	Testing	3 hrs	Test	Kalpan

Acceptance Criteria:

- Given that the GUI is properly implemented, when a user selects the 'notify a friend' feature, then they will be able to select a contact.
- Given that the set a text message and prerecorded voice message is implemented properly, when a user selects there message and message type, then a job will be scheduled for the alarm.
- Given the the backend logic is implemented, when a user fails to turn off an alarm, then the target phone number will be contacted with the preset message.

User Story #5 As a group admin, I would like to form a group to manage alarms for multiple users, e.g., family, group activities, sports team.

#	Description	Time	Team	Owner
1	Study API and server to learn about communications between android phones	5 hrs	Back	John
2	Create classes for Group Admin and User	1 hr	Back	John
4	Create GUI for Group Admin	2 hrs	Front	John
5	Create GUI for User	2 hrs	Front	John
6	Implement Push notifications/ Extend server functionality to handle group requests.	8 hrs	Back/ Server	Scott
7	Testing	2 hrs	Test	Scott

Acceptance Criteria:

- Given that the GUI is implemented, when a group admin creates a group alarm then it will appear
- Given that the GUI is implemented, when a group admin is created, then a custom class will be instantiated
- Given that the Push notifications are implemented and server can handle the requests, when a group admin's alarm is updated then it will notify the users' alarm

User Story #6 As a user, I would like to have multiple groups so that I can manage different sets of people easier rather than having to manually assign alarms to different subsets of a single group

#	Description	Time	Team	Owner
1	Create GUI to handle listView/arrayList	2 hrs	Front	John
2	Write logic to update the listView	1 hrs	Back	John
3	Testing	1 hrs	Test	Kalpan

Acceptance Criteria:

- Given that the listView is implemented, when the user pulls up the list, then they will be able to view all group alarms
- Given that the logic is implemented, when the user adds, deletes, or edits an alarm then the list will be updated
- Given that the arrayList is implemented, when a new group is created, then it will be stored into the arrayList to be accessed by the listView

User Story #7 As a group admin, I would like to create alarms/notifications for the entire group so that one person can be in charge of deciding the wake up time

#	Description	Time	Team	Owner
1	Write logic for sending alarm information from one phone to others	8 hrs	Back	John
2	Prevent Users from editing alarm	2 hrs	Back	John
3	Testing	1 hrs	Test	Scott

Acceptance Criteria:

- Given that the logic is implemented, when the user pulls up the group alarm, they will be able to see the alarms but not change the time
- Given that the logic is implemented, when the user pulls up the group alarm, they will be able to change any other features of the alarm except the time(i.e. text/phone, custom message, etc.)
- Given that the logic is implemented, when the user tries to change the time of the alarm, then a message will appear notifying them that they cannot and why

User Story #8 As a group admin, I would like to add and delete members so that I can easily manage membership

#	Description	Time	Team	Owner
1	Create data structure and custom object to store users' information	1 hrs	Back	John
2	Create GUI that allows create/delete and what options to be selected	1 hrs	Front	John
3	Testing	1 hrs	Test	Scott

Acceptance Criteria:

- Given that the GUI is implemented, when the option to add a new member is selected, then data can be input
- Given that valid data is input, when the user confirms, then the data will be added to a list of users receiving the alarm
- Given that an the data structure and custom object to store information is implemented, when values are changed in the data structure, then they will be visually updated in the GUI

User Story #9 As a parent, I would like to leave audio notes for my child so that I can be assured they receive my message when they wake up

#	Description	Time	Team	Owner
1	Connect pre existing record message activity for file selection	2 hrs	Back	John
2	Create GUI to select file	1 hrs	Front	John
3	Testing	1 hrs	Test	Kalpan

Acceptance Criteria:

- Given that the GUI is implemented, when a file is selected, then it will be set as the message to be played
- Given the the GUI is implemented and a custom audio is added, the parent will be able to access the record voice activity and have that message set as the one to be played
- Given that the record message activity appears when prompted, when the user inputs audio, then the activity will save the audio

User Story #10 As a developer, I would like to connect all the submodules implemented into a working application

#	Description	Time	Team	Owner
1	Connect all the submodules	4 hrs	Back	All
2	Testing	2	All	All

Acceptance Criteria:

- Given that all GUI's are implemented correctly, when app views are integrated, then the user should be able to navigate throughout the app.
- Given that front and background logic are implemented correctly, when the submodules are merged, then each submodule should be able to communicate without error.
- Given that the client data storage handler and the flask service is implemented correctly, when communication between client and server is integrated, then the server should be able to receive defined requests and update the client accordingly.

User Story #11 As a traveller on some moving vehicle, I would like to be woken based off of location

#	Description	Time	Team	Owner
1	Set up the GUI	3 hrs	Back	Ashwin
2	Implement Google map API to find the location	5 hrs	Back	Ashwin
3	Implement Google map API to set the radius	5 hrs	Back	Ashwin
4	Schedule the alarm so that it will ring when user is within radius	8 hrs	Back	Ashwin
5	Store on local storage and server	2 hrs	Back	Kalpan
6	Testing	2 hrs	Test	Ashwin

Acceptance Criteria:

- Given that the GUI is implemented, the user should be able to search locations and set the radius
- Given that the GUI is implemented, the alarm should ring when the user is within the set radius
- Given that alarms can be created, when alarms are created/modified, they should be stored on local storage, such that they can be retrieved after an application is killed.
- Given that alarms are created, when alarms are created or modified, they should update on the server.

Functional Requirements:

Call a friend

1. ~~As a user, I would like to be able to set a contact who would be called to wake me up so that in case I do not wake up or sleep past my alarm I will have a safety net~~
2. ~~As a user, I would like to be able to record my own voice message so that others can be notified with a call if I fail to manually stop my alarm.~~
3. ~~As a user, I would like to be able to set custom text messages so that others can get notified with this message if I fail to manually stop my alarm.~~
4. As a user, I would like to set a contact who will be notified with a message so that they can confirm whether or not I woke up
5. As a user, I would like to have multiple contacts from which I can choose which ones to call or text
6. ~~As a user, I want to set default text and voice messages for new alarms so that I do not have to create a custom message/recorded message for every new alarm~~
7. ~~If time allows: As a user, I want to have templates for text and voice messages for any alarm, old or new, so that I can quickly choose these to notify people~~
8. If time allows: As a user, I would like to be able to have a call log so that I can conveniently see the people I have been calling and the people who have been calling me
9. If time allows: as a user, I would like to be able to import contacts from my phone so that I can more easily deliver messages or wake up calls to other users of the app

Group feature

1. ~~As a group admin, I would like to form a group to manage alarms for multiple users, e.g., family, group activities, sports team.~~
2. ~~As a user, I would like to have multiple groups so that I can manage different sets of people easier rather than having to manually assign alarms to different subsets of a single group~~
3. ~~As a parent, I would like to leave audio notes for my child so that I can be assured they receive my message when they wake up~~
4. ~~As a group admin, I would like to add and delete members so that I can easily manage membership~~
5. ~~As a group admin, I would like to create alarms/notifications for the entire group so that one person can be in charge of deciding the wake up time~~
6. As a group admin, I would like to see the alarm status of the users.

7. If time allows: As a group admin, I would like to decide on whether users can see other user's success, so that I can allow them to see others' updates
8. If time allows: As a user, I would like to be able to mute updates for specific groups so that in case I am part of that group but temporarily unavailable, I am not concerned with the new updates in that group.

Location feature

1. ~~As a traveller on some moving vehicle, I would like to be woken up based off location.~~
2. As a user, I would like to have a backup time based alarm on the event, so that I have a backup if the satellites or the internet is unavailable.
3. If time allows: As a user, I would like to be able to see my history of locations so that I can easily select frequent commutes instead of manually resetting the alarm every time
4. If time allows: As a user, I would like to be able to set repeat alarms for frequent commutes so that I do not have to manually reset the same alarm every time

Analytics

1. As a user, I would like to see my "success rate" of my time alarms, for each month over the past year, so that I can gain relevant and important information about my success rate over the passage of time.
2. As a user, I would like to see "the success rate" of a specific feature, for each month over the past year, so that I can gain understanding of the effectiveness of that feature.
3. If time permits: As a user, I would like to see a visual chart for the analytics on success rates, so that there is better visualization for me to understand the data.
4. If time permits: As a user, I would like to receive suggestions for alarms based on my past usage, so that it becomes easier for me as the app would make the decisions for me.

LED lights

1. If time allows: As a user, I would like to be able to woken up to LED light set in the room at a specific time so that I can be woken by light rather than sound
2. If time allows: As a developer, I would like to control the LEDs using a microcontroller so that they can be controlled remotely by remotely controlling the microcontroller
3. If time allows: As a developer, I would like to connect my app to an microcontroller so that it can control the LEDs
4. If time allows: As a user, I would like to have a physical switch next to me which can act as a toggle switch for a specific or multiple alarms.
5. If time allows: As a user, I would like to have a LED light attached to the switch which is used turn off an alarm, so that I can easily and without confusion, say whether the corresponding alarms are active or not.

General features

1. ~~As a user, I would like to set an alarm based on time, so that I can be woken like how traditional alarms wake us up~~
2. ~~As a user, I would like to set ringtones for normal alarms, so that I can choose for the same~~
3. ~~As a user, I would like to be able to easily view all my alarms so that I can conveniently check and update them~~
4. ~~As a user, I would like to set an unlimited amount of alarms~~
5. If time allows: As a user, I would like be able to connect to Spotify so I can use a playlist as an alarm.
6. As a user, I would like to select multiple features simultaneously
7. If time allows: as a user, I would like to I would like to have the option to use the same alarm more than once so that I do not have to reset the same alarm every time
8. If time allows: as a user, I would like to set an alarm that resets itself over a time period. (i.e. the same alarm automatically gets set every Tuesday at 6pm.) so that I do not have to reset the same alarm every time

Non Functional Requirements:

Integrated Application

As develops of the project, we want to have early prototypes of the application in its entirety. We can only do that if we have an integrated application where different developers' work is in one, and can be tested by people in one session. Therefore, one of our non-functional requirement is to have an integrated application as we develop.

Architecture

We plan on having a client server architecture, with a fat client. The server is required because we need communications between different phones with the app installed and further there is a group feature present.

Doing the bulk of the work on the client will allow the user's personal settings to be set immediately, without needing to sync up with the server.

Text calls with pre-recorded voice message will all be stored in and delivered from the user's phone, just like WhatsApp and other apps, to minimize storage and workload put on the server. We assume a typical user to be:

- Having 5 prerecorded voice messages of 1 minute each.
- Having 5 text message templates

Therefore, the total size of data that the application generates is about 10 MB.

Further, we plan on having statistics data to be sent each day to the server set-up on a cloud. Whenever the user wants to see the data, it is retrieved from the cloud.

Performance

Keeping group settings synced among users can require a lot of requests to the database, which can result in slower UI and a drain on the battery. Rather than constantly checking, the app will automatically update on startup and manual refresh by the user, and check for changes every 60 seconds while the app is open. While the app is stopped, the background client will do checks every 30 minutes if connected to wifi, and every hour if not. In addition to refreshing, we aim for the standard 3.9 seconds for the first leg of the call(output signal to the network) and 3.6 seconds for the third leg(network to receiving end). The second leg will be determined based on relative location of the two endpoints of a phone call, but it is 7 seconds as an absolute worst case scenario.The text notification should take no more than 3 seconds to deliver, aiming at an ideal 1 second.

Scalability

For our back end we will be utilizing a cloud based server. We currently plan to allow 100 MB of user data per user. By using a cloud based server, we can easily expand our total storage and increase the amount of requests that can be made to the server per month, which will allow us to handle a drastic increase in users.

Usability

The user interface and the user experience of the app should be such that it is intuitive and easily used by all the possible users. After all this is an alarm app which shouldn’t be one where a lot of time is spent on, and hence it should be user friendly.

Security

Using a cloud based server will greatly reduce the likelihood of security breaches. Time permitting, we plan on encrypting the data to be sent to and from the client. We have not decided what encryption method to use, but aim to match industry standard performance times, if not more efficient based on the small amount of text to be encrypted.