# Sprint 1 Planning Document

# Alarm2

Team 20

Ashwin Chidanand, Kalpan Jasani, John Redmon, Scott Walters

## Sprint Overview

This sprint will focus on setting up basic functionality of our alarm application. This includes having a functioning prototype in which a user is allowed to create a time based alarm, without the features of a group.

Scrum Master: Scott Walters

Meeting Plan: Mondays and Wednesdays (7:30 pm - 9:00 pm)

Risks and Challenges:

The biggest challenge of this sprint will be learning the various APIs that we will be working with. These include:

1. Android API
2. HTTP requests between server and client
3. API to communicate with the database in the server
4. Potentially, using Twilio’s API, for placing phone calls

With regard to the learning curve involved, our initial sprint has easier, achievable targets.

Front end will need to familiarize themselves with how to use Android Studio UI capabilities. We define the teams in the table present below. The back end team will be learning the system interaction API with the Android operating system.

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

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| --- | --- | --- | --- | --- |
| # | Description | Time | Team | Owner |
| 1 | Set up screen to change alarm settings | 4 | Front | Ashwin |
| 2 | **Pull in default ringtones from OS** | 1 | Front | Kalpan |
| 3 | Set up storage of alarms on local storage | 4 | Back | Scott |
|  | Background Service |  |  |  |
| 4 | Extending API of a service for creating a new service | 4 | Back | Kalpan |
| 5 | **Create an API for the alarm application to request from the service** | 4 | Back | Scott |
| 6 | Write logic to trigger an alarm | 4 | Back | John |
| 7 | **Read from present alarms on phone’s local storage on startup** | 2 | Back | Scott |
| 8 | Testing | 2 | Test | Kalpan |

Acceptance Criteria:

- The background service should be starting automatically initially and should run continuously even if the application is not running.

-Given the local storage of alarms and backend service is implemented, when user creates an alarm, then the alarm and its settings will be added to the storage.

-Given that the alarm has been successfully created, it will be triggered at the appropriate time.

## User Story #2: As a developer, I would like to verify the user’s number using an automatic verification code so that people don’t misuse the application by adding wrong numbers

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| --- | --- | --- | --- | --- |
| # | Description | Time | Team | Owner |
| 1 | Set up a front end verification screen | 1 | Front | Ashwin |
| 2 | Set up a verification code send-and-check  **Fix bug** | 4 | Back | John |
| 3 | Get service permissions for the application’s required services from the OS | 2 | Back | Kalpan |
| 4 | Testing | 1 | Test | Scott |

Acceptance Criteria:

-Given that the verification screen is created correctly, when a user opens the app for the first time, then he or she will be prompted to enter their name.

-Given that the verification process is implemented correctly, when a user submits their name, then the number will automatically be verified.

-The application should be able to request service permissions for location services, access to contacts, access to local storage on SD card, and more.

## User Story #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

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| --- | --- | --- | --- | --- |
| # | Description | Time | Team | Owner |
| 1 | Design Icons/Theme | 5 | Front | Ashwin |
| 2 | **Read from Background to display alarms** | 1 | Front | Ashwin |
| 3 | Create dummy user interface for features to be included in future sprints | 2 | Front | Ashwin |
| 4 | Design GUI for editing existing alarms | 2 | Front | Ashwin |
| 5 | Write logic for updating existing alarms | 2 | Back | Ashwin |
| 6 | Testing | 2 | Test | Kalpan |

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 #4: As a user, I would like to set a custom ringtone

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| --- | --- | --- | --- | --- |
| # | Description | Time | Team | Owner |
| 1 | **Set up GUI in the settings menu for adding ringtones** | 4 | Front | Kalpan |
| 2 | **Select file and store its file path** | 4 | Back | Kalpan |
| 3 | Testing | 1 | Test | Scott |

Acceptance Criteria:

-Given that the GUI is implemented, when a user is in the settings menu, they can retrieve a valid sound file in the accessible files on the phone.

-Given that an mp3 file is selected, the file path would be stored in app’s data when the user confirms the selection.

## User Story #5: 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

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| --- | --- | --- | --- | --- |
| # | Description | Time | Team | Owner |
| 1 | Create templates and premade voice/text messages to be used as default values | 4 | Back | John |
| 2 | Set up GUI for users to manage templates | 4 | Front | John |
| 3 | Add logic to take user input and update default values  **Need to do voice, text is done** | 4 | Back | John |
| 4 | Testing | 2 | Test | Kalpan |

Acceptance Criteria:

-Given that default messages and templates are created, when a user creates messages, then he or she will be able to select default messages or edit existing templates.

-Given that the ‘notify a friend’ feature is correctly implemented, when a user selects a person to notify, then they will be able to select from the default messages.

-Given that templates are implemented, when a user chooses to phone a friend, the default messages will be ready to be sent to the target phone number.

## User Story #6: 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.

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| --- | --- | --- | --- | --- |
| # | Description | Time | Team | Owner |
| 1 | **Allow user to select a file** | 2 | Front | Kalpan |
| 2 | **Trim the file to a given time of 45 seconds** | 2 | Back | Kalpan |
| 3 | Testing | 1 | Test | John |

Acceptance Criteria:

-Given that the file selection is implemented, a user can choose a pre-existing .mp3 file for a ringtone

-Given that a file longer than 45 seconds is selected, it will be trimmed down to 45 seconds

-Given that a file does not exist, the user will receive an error message saying they have no files

## User Story #7: 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.

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| --- | --- | --- | --- | --- |
| # | Description | Time | Team | Owner |
| 1 | Set up GUI for user to enter custom text message | 2 | Front | John |
| 2 | **Store text file in local storage**  **(currently in RAM)** | 2 | Back | John |
| 3 | Testing | 1 | Test | Ashwin |

Acceptance Criteria:

-Given that the GUI is implemented, a text file can be created to be sent as a text message in the options menu

-Given that a text message is entered by the user, it will be stored in the database

-Given that the local storage communication is implemented, the text file can be selected as a custom message in the future

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## User Story #8: 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

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| --- | --- | --- | --- | --- |
| # | Description | Time | Team | Owner |
| 1 | Set up GUI to select number using search bar or import contacts | 5 | Front/Back | Ashwin |
| 2 | Pull contacts | 4 | Back | Ashwin |
| 3 | **Write backend logic to handle notifying contact** | 4/6 | Back | Ashwin/ John |
| 4 | Testing | 3 | Test | Scott |

Acceptance Criteria:

-Given that the GUI is properly implemented, when a user selects the ‘notify a friend’ feature, then they will be able to enter a number.

-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 a preset message.

-Given that the pull contacts is implemented, when the user selects this option instead of searching the app will pull up their contact list

## User Story #9: As a developer, I would like to set up a server that handles communication

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| --- | --- | --- | --- | --- |
| # | Description | Time | Team | Owner |
| 1 | Set up cloud server | 2 | Server | Scott |
| 2 | Set up service to interact with the client | 6 | Server | Scott |
| 3 | **Design communication standards client server interaction** | 2/2 | Server | Scott / Kalpan |
| 4 | Design and create database | 4 | Server | Scott |
| 5 | **Testing** | 3/2 | Test | Kalpan / Scott |

Acceptance Criteria:

-Given that the backend server is implemented correctly, when a group alarm is created, then the settings and group information should be added to the database.

-Given that the alarm was created, when the settings are added to the database, then all users’ clients associated with the alarm should be updated.

-Given that push notifications is implemented, when a group alarm has went off, group admins should be able to see the success of the alarm.

**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 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
2. As a parent, I would like to form a group so that I can easily manage alarms for the family
3. As a parent, I would like to have an admin account, so that I can manage my child’s account
4. 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
5. As a parent , I would like to set an alarm for my child
6. As a parent, I would like to set to receive a notification indicating the success of my child stopping the alarm.
7. As a group admin, I would like to add and delete members so that I can easily manage membership
8. 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
9. As a group admin, I would like to see how many people successfully woke up with the group alarm
10. As a group admin, I want to be notified if somebody cancels the alarm so that I can easily track who has woken up to the alarm
11. 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
12. 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 by choosing a location, upon reaching which, I am woken up, so that I do not need to worry about the exact time I will reach that location
2. As a user, I would like to be able to set a radius around the location for which the alarm is activated, so that I can allow error in location of the GPS and also allow myself time to prepare
3. 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.
4. As a user, I would like to be able to set a custom notification sound for location based alarm
5. 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
6. 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:**

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.