Care for Care

By

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PROBLEM STATEMENT

We are designing an android application for senior citizens to communicate their daily activities with their loved ones.

We are working with the NGO, Services for Seniors.

INTRODUCTION

This is a simple Application meant for the elderly based on the publish subscribe model. When a user logs in the app for the first time, he would have an option to act as the "Golden Ager" who would be the elderly or as the "Family Member".

There two main users of this application

1. Elderly / Golden Agers/ Publisher :

   When a user chooses to be an elderly, he would act as a publisher. He would record his daily chores like the fact that he has woken up, has had his lunch or is going to bed. All the information that this user wants to share with his family could be recorded and broad casted to all his family members is a very simple manner.

   After the user selects his role, he is asked to enter his phone number which is then verified by the app. App through Twilio (a messaging API) would send the same device a text message with an authentication code to make sure that the number used is valid. On reception of the message, the app would fetch the code, verify and validate it. Once validated, the user wouldn't be asked for login credentials next time.

   Then the App home screen would show up which would have two tabs. The Record tab and the Contacts tab. By default the Record tab would open where there would be a Microphone icon in the center where the elderly could tap and record their message and send to all the contacts in his Contacts List which essentially would be his family members.

   The second tab would allow the elderly or his family members to add themselves to this contacts list by adding their phone number using there device. Once the phone number is added to this app the family members would become the subscriber and would get all the voice messages and text messages on their device. The text messages would be obtained by voice to text conversion using Google's voice recognition API.

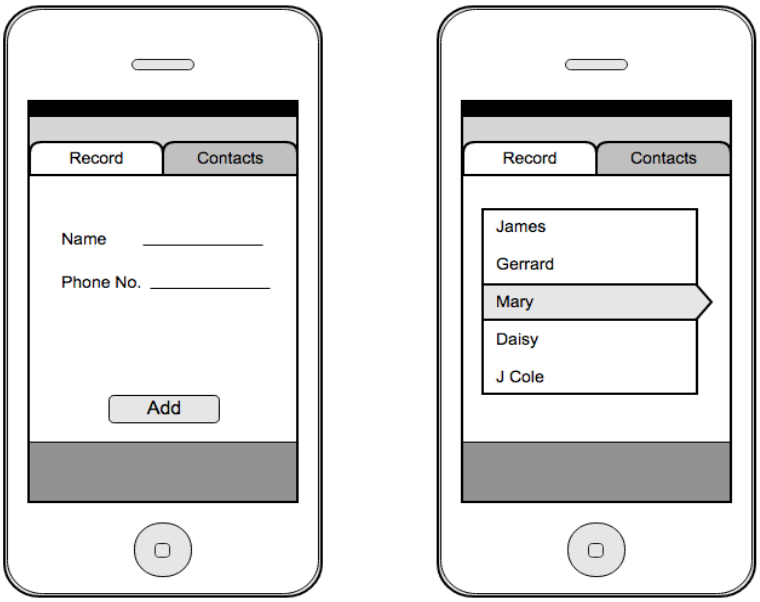
2. Family Members/ Subscribers

   The second type of user is subscribers or family members. When the first launch the App, they choose the Family Member as the user. Their home screen would consist of two tabs. First would have a list of voice messages from the elderly and the second tab would have equivalent text messages. The family member could use either way of reception of message as per their convenience.

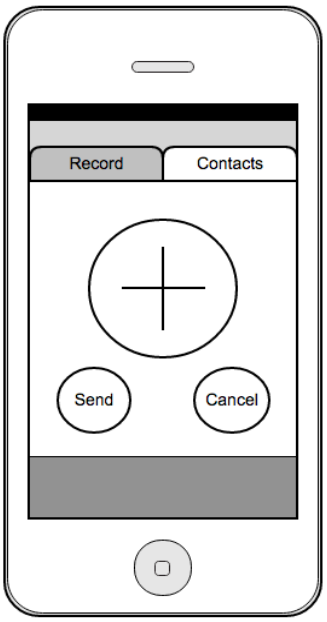
These messages both audio and text would automatically be deleted after a configurable span of time.

MOCKUPS

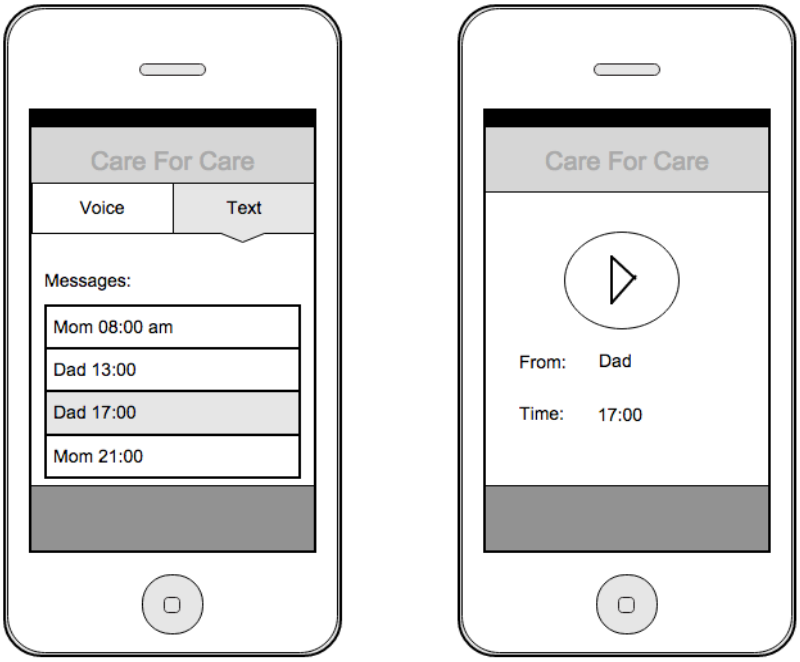
Login



Add Contacts



Record a message



Subscriber

MODULES

MQTT

We have used MQTT in our project to provide the messaging service. MQTT is technically a light-weight publish-subscribe model based messaging service meant for machine-to-machine communication. We have implemented a model where the one client publishes an audio file and the other client(s) subscribe and retrieve the audio file.

The application being used by a senior member will contain the publisher module. Once the senior records a voice, the audio file will be published to a unique topic on the broker.

The broker - which is up-and-running on AWS EC2 - acts as a mediator between the publisher and the subscriber. The broker maintains the topics and forwards the respective messages to the clients subscribed to the specific topic. The broker has been configured to persist messages up to a certain limit.

The application used by the contacts/family members have a subscriber module within it. The subscriber client subscribes to topics on the broker. The subscriber can recieve

messages for the topics it has subscribed to. In this case, the subscriber will recieve audio files. The subscriber module is configured to accept missed messages/audio when the app stops and restarts itself.

MQTT SAMPLE

Running Publisher.java after adding a path to any file will publish the file by converting it into a byte array.

Running Subscriber.java after adding a path to any output file (with correct extension) will allow the file to be downloaded.

Twilio

We are planning to use twilio API to send text message that contains the first time authentication token with an URL in it. Once the user clicks on the URL, his entered phone number is verified and he can use the application seamlessly using his phone.

TECHNOLOGIES USED

1. MQTT
2. Mosquitto
3. Android
4. Twilio
5. Eclipse Paho

BENEFITS

1. It would have a publish subscribe model where all the members of the family who want to check on their elders would get notifications from them.
2. A very simple UI and workflow that our elders would understand and would provide easy usability.