**Software Implementation and Testing Document**

**For**

**Group 21**

Version 1.0

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# Programming Languages

We are using Java for the entire framework of the app since it is the easiest for us to use because some members are already familiar with it and due to the fact that we are using Android Studio to implement the app, it makes sense to. We are also using Java for the interaction with the database via Google Firebase, for the same familiarity and ease of use reasons previously stated.

# Platforms, APIs, Databases, and other technologies used

For the Basic UI we have so far, we used elements native to Android Studio. We are using Google Firebase to create our database and we are using Google Maps API for the location services our app provides. We are also using Google Firebase for user authentication and for database management.

# Execution-based Functional Testing

Tested Google Maps API by using the Android emulator provided by Android Studio and fed it many different location data to ensure accuracy and that user location data is correctly uploaded to Firebase. Also used the Android Emulator to test User Authentication. Also used a physical Pixel XL running Android 9 to test User Authentication.

Tested messaging and display of users by using the Android emulator provided by Android Studio. After logging in, I clicked on the Users tab and clicked on the user I wanted to message. Then, the message page opened up and I sent messages. After this, I checked the database and ensure the chats data where being saved. I signed up for different accounts and did this to ensure messaging was working. The messages were also displaying on the UI. However, this feature is not yet fully implemented.

# Execution-based Non-Functional Testing

1) *User is able to create an account that will allow them access to groups that they are in. High Priority*

While it’s not 100% done yet, users were tested and they can locate other users of the database and interact with them on a chat, as of the moment we only have individual diagrams, it will be accomplished by the last iteration since we ran into issues with the database,

*2) System allows for the creation of groups of users. High Priority*

Not done yet, will be accomplished by the last iteration since we ran into issues with the database

*3) System tracks user in real time and uploads their location to the database*

We have tested this by checking if the app can accurately tell where a certain user is located, it has succeeded and it can be checked by looking at the coordinates that pop on the screen

*4) Groups of users can chat with others in the group and also see the locations of group members. High Priority*

Not done yet, will be accomplished by the last iteration since we ran into issues with the database

*5) System has a button that sends an SOS message to others in the group. High Priority*

Awaiting for the actual creation of the groupchat

*6) User is able to upload a profile picture. Low Priority*

Almost done, as of right now, when we test it by creating a new account it says that it cannot access the storage media of the device

# Non-Execution-based Testing

*1) Ensuring that the user’s location is only visible to other users in the same group*

Not done yet, will be accomplished by the last iteration since we ran into issues with the database

*2) Making sure that the user exists in the database when trying to log in*

We have tested this by checking the real time database in Firebase

*3) Verify e-mail is unique and belongs to the user*

An error pops up when a user tries to register with an email that already exists, tested successfully.

*4) Messages shared between users will be private*

We have added security to our Firebase database by only letting data flow between engaged chats, additionally, a user can only see its own conversations, not of others

Describe how/if you performed non-execution-based testing (such as code reviews/inspections/walkthroughs).

We performed a lot of code review and inspection by trying to collaborate with each other when running into issues, since this is a new experience of building an app we had to check often if other people in our group had any ideas on how to fix issues. We had 2 developers with the most experience in Java trying to help andthen collaborate with Firebase.