Design

Frank Maclure

Stages of development:

Stage 1, Algorithms:

In this stage I will develop the encryption and decryption algorithms.

This stage should take around 3 to 4 weeks at most to complete.

This gets its own stage because the decryption and encryption algorithms are at the core of the project and are the most technically complex. This will also most likely be the longest stage in development because of the research that I will need to do and the complexity.

This comes first because all later stages will be built off each other with this being the most fundamental for the project to succeed.

<u>This stage was started the week of 22/09/2025</u>

Stage 2, Messaging Protocol and Server:

In this stage I will develop the messaging system and server management.

This stage should take 2 to 3 weeks to complete.

This needs its own stage because the messaging system will be using a central server to send and receive messages.

This comes after the Algorithms stage because it will be using the algorithms I will develop in that stage.

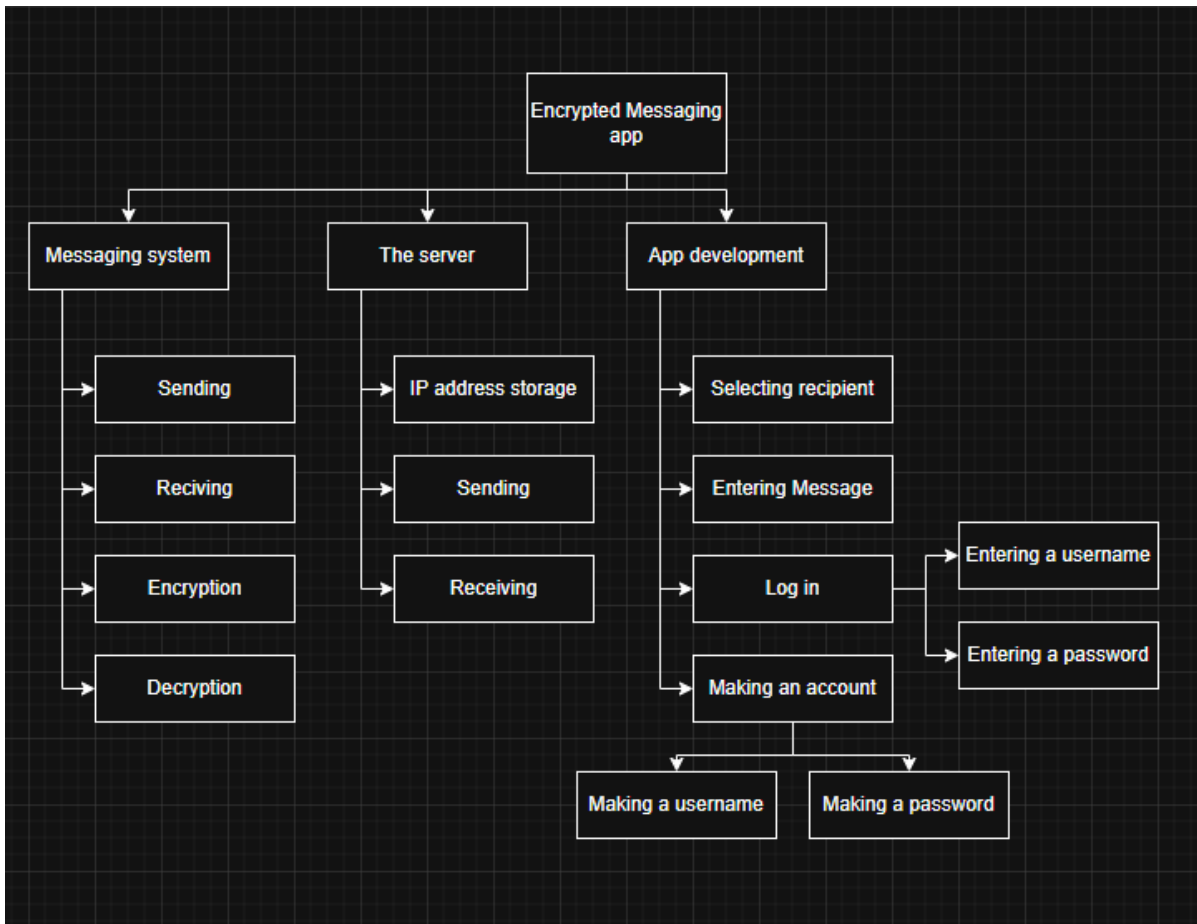### Stage 3, App Development:

In this stage I will develop the android app. This will be the front end of the project.

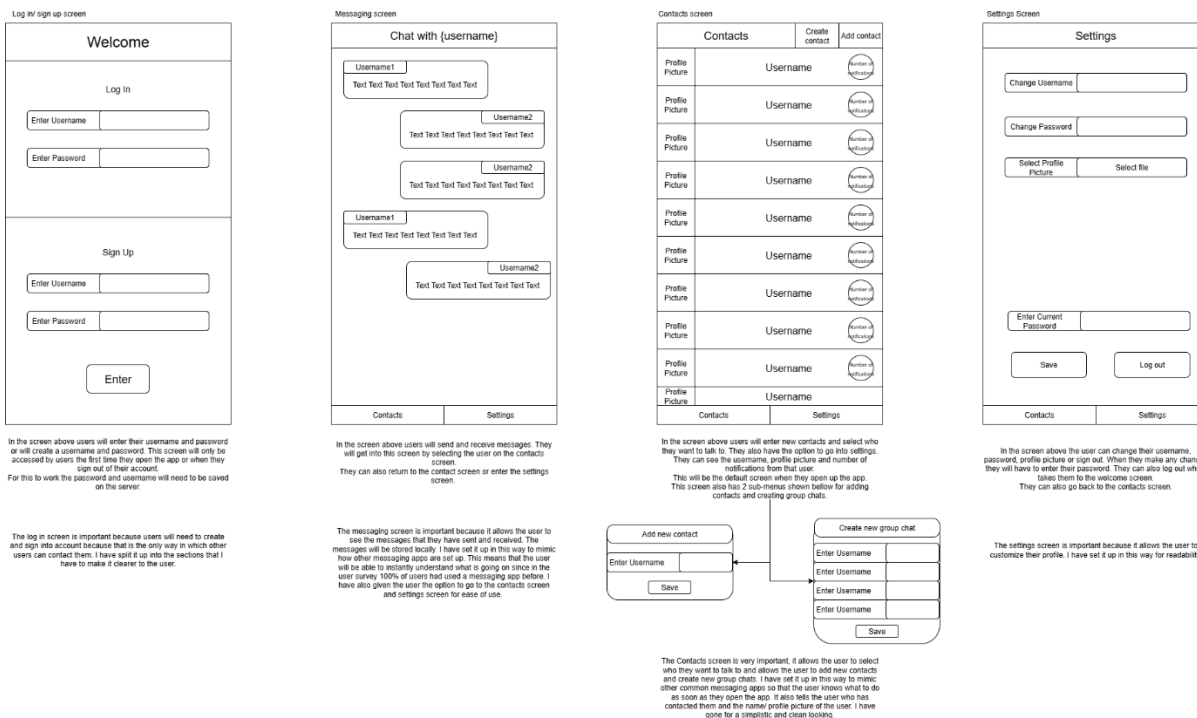This stage should take around 2 to 3 weeks to complete.

App development requires its own stage because, this is what the end user will be interacting with.

This comes last because it requires the messaging system and encryption algorithms to have already been developed to work.

Structure diagram

GUI design:

In the screen above users will enter their username and password or will create a username and password. This screen will only be accessed by users the first time they open the app or when they sign out of their account.
For this to work the password and username will need to be saved on the server.

The log in screen is important because users will need to create and sign into an account because that is the only way in which other users can contact them. I have split it up into the sections that I have to make it clearer to the user.

In the screen above users will send and receive messages. They will get into this screen by selecting the user on the contacts screen.
They can also return to the contact screen or enter the settings screen.

The messaging screen is important because it allows the user to see the messages that they have sent and received. The messages will be stored locally. I have set it up in this way to mimic how other messaging apps are set up. This means that the user will be able to instantly understand what is going on since in the user survey 100% of users had used a messaging app before. I have also given the user the option to go to the contacts screen and settings screen for ease of use.

In the screen above users will enter new contacts and select who they want to talk to. They also have the option to go into settings. They can see the username, profile picture and number of notifications from that user.
This will be the default screen when they open up the app. This screen also has 2 sub-menus shown bellow for adding contacts and creating group chats.

The Contacts screen is very important, it allows the user to select who they want to talk to and allows the user to add new contacts and create new group chats. I have set it up in this way to mimic other common messaging apps so that the user knows what to do as soon as they open the app. It also tells the user who has contacted them and the name/ profile picture of the user. I have gone for a simplistic and clean looking.

In the screen above the user can change their username, password, profile picture or sign out. When they make any changes they will have to enter their password. They can also log out which takes them to the welcome screen.
They can also go back to the contacts screen.

The settings screen is important because it allows the user to customize their profile. I have set it up in this way for readability.

Link to GUI design: https://drive.google.com/file/d/14Zd87GHx3LBj0VEMFuzGgsnA4FMV6xlG/view?usp=sharing

Test plans: