

Initial Plan

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CM3203 – One Semester Individual Project
40 credits

The initial plan of the project; “Secure mobile chat with message routing”, this plan outlines the objectives, goals and aims of this project and how I will deliver them. It defines what I plan on creating and ultimately what I plan on delivering at the end of this project.

Project Title - Secure mobile chat with message routing

Project Description

The project I am undertaking is the creation of a secure messaging application for the Android operating system. The application will make use of peer-to-peer Wi-Fi connections to talk directly to devices thus not using conventional global or local networks such as the internet or cellular telephony networks.

It will make use of encryption and decryption algorithms to allow singular and group messaging functionality; this will be simple text chat exchanges and picture exchanges. It will also implement the “Spray and Wait” network policy, whereby if a contact is out of range of communication exchange it will be stored on another friendly device in range so that when the intended recipient arrives in range, the message can then be forwarded to that individual/device.

The application development will prioritise the functionality of the messaging service over the “look and feel”; I will adhere to HCI policies and will design the application with some ease of use in mind, but graphical ‘flair’ and ‘fancy’ UI features will be kept to a minimalistic view. The application will also mainly target mobile/smartphones, dependant on how the development of the application and the feasibility of time for further development; I will try to have the application working on Android Tablets alongside Android mobile phones.

All of this will be programmed in the Java programming language, using the Eclipse IDE with the Android SDK alongside third party Java security libraries that I have yet to decide upon.

Ethics

Given the scope and goals of this project, no specific ethical concerns arise that fall under the jurisdiction stated in Cardiff University’s code of ethics policy.

Project Aims and Objectives

The following is a list of the core and sub-core aims & objectives I have for this project;

- Core Aims
 - To build a **functioning Android application** that allows secure communication without internet or cellular network access.
 - To have the application handle **secure group & singular messaging facilities**;
 - Including the sending of **picture messages securely**.
 - To implement the “**Spray and Wait**” network policy for out of range recipients.
 - To build the application with **efficiency in mind, power consumption, CPU usage** and the **memory footprint** will be key considerations during the development process.
 - To produce **clean and concise code** that may be released in the future on open source platforms such as **GitHub**.
 - To maintain the principle of **security and privacy** being **paramount** to any potential users of this application.
- Sub-Core Aims
 - To make the application **simplistic and user-friendly** so that it could appeal to a potentially ‘mass market’ if it is ever to be released to the public.
 - To **optimise the application** to work on larger devices, such as **Android tablets**.

Work Plan

The work plan I have created is presented below;

1. Complete & Submit the Initial Plan by February 2nd.
2. Review any existing similar applications during week 2 (February 2nd-5th) alongside setting up the Android development environment for future use, this includes downloading the necessary drivers and software development kits that will be required for any Android development.
3. Start to design the User Interfaces, and produce mock-ups for the application. I will also research the requirements I will need to produce secure chat exchanges such as encryption/decryption algorithms, any libraries that are available to help the development process along. I will also at this stage, try to decide upon a satisfactory name for the application. This will occur between the dates of February 5th-16th.

4. Finalise a design and begin the implementation process, starting with Secure Text chat via 1-1 communication, and then implementing group secure chat. After that picture messaging and finally the spray and wait network policy. This will take place after February 16th up until the end of March.
5. Test the application to ensure everything works as intended, using a Test plan and various Android devices/Emulators that I can get a hold of. This will occur during the end of March and will be continued over the Easter Holiday period.
6. If testing of the application goes well, and time is permitted I will create a version of the application optimised for Android Tablets. This may occur during the end of the Easter holiday period, up until the start of April.
7. Finally, I will begin and finish the Final Report, starting in April and ending before the deadline date; 5th May.

During the above processes I will constantly document and create notes where applicable on choices I have made, why they were made and any other factors concerning the development life cycle of the application that will be important for the final report. I will also arrange to meet up with my supervisor **at least once every two weeks**, but preferably every week. This will be to discuss any issues I am having, how the project is going, and any questions or queries I may have for him. Finally two major meetings will occur in **weeks 4 and 8**.

By the end of the work-plan I should have a functional **prototype application** which will commit to my core aims stated above, and potentially the sub-core aims. I will also provide **commented source code** alongside my completed **final report** ready to be presented and discussed during the final presentation of the application at the intended meeting.

I have produced a Gantt chart for personal use to help me keep track of progress of where I should be in relation to where I exactly am according to the dates set-out in the work plan above; the Gantt chart will be a useful visual guide. That is included on the next page.

