# Secure Messaging Application - Project Documentation

## 1. Project Overview

This document outlines the development of a secure and ephemeral messaging application using Android Studio, Java, and XML. The application allows users to communicate anonymously by sharing a unique username. Messages, including text, images, and videos, will disappear after being viewed to prioritize privacy and security. Additionally, the app ensures no message content is stored once the user exits the application.

## 2. Key Features

• Username-based messaging: Users only need a unique username to send or receive messages. The username can be fictional and serves as the sole identifier.

• Ephemeral messages: Messages disappear after being viewed, with the duration of availability depending on the message size.

• Secure notifications: Message content will not be visible in notifications. Users must open the app to read messages.

• Support for multimedia: Users can send text, photos, and videos, all of which disappear after being viewed.

• Contact management: Usernames of contacts are stored, but users can delete them if desired. A pop-up alert reminds users to save usernames externally if necessary.

• Privacy-first design: All message data is cleared when the user exits the app, ensuring no history remains.

## 3. Value Proposition

The app prioritizes privacy and security, providing a platform for secure, anonymous, and temporary communication. Its features cater to users who value confidentiality and minimal digital footprints, making it ideal for private discussions.

## 4. Technical Requirements

• Development Environment: Android Studio

• Programming Languages: Java and XML

• Database: Firebase Realtime Database for managing usernames and message delivery

• Notifications: Firebase Cloud Messaging (FCM) for sending notifications

• UI/UX Design: XML-based layouts with a minimalistic and user-friendly approach

• Security: End-to-end encryption for messages and secure storage for temporary data

## 5. Development Steps

• Set up the Android Studio project with necessary dependencies.

• Design the application’s UI using XML, focusing on minimalistic and user-friendly layouts.

• Implement user registration and login functionality with unique username generation.

• Develop the messaging feature to send and receive messages via Firebase Realtime Database.

• Integrate Firebase Cloud Messaging (FCM) for secure notifications.

• Implement message expiration logic to delete messages after being read, based on size and type.

• Ensure all message content is cleared upon exiting the app, except for stored usernames.

• Add features for managing contact usernames, including delete and alert functionalities.

• Test the app thoroughly for security, privacy, and usability issues.

• Publish the app on Google Play Store or distribute through alternative channels.

## 6. Conclusion

This secure messaging app leverages ephemeral messaging to ensure user privacy and security. By following the outlined development steps and adhering to the technical requirements, the application can provide a robust platform for anonymous and confidential communication.