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Secure Messaging Application

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Abstract- The online chatting application is a web-based management application. In this system, the user can review the chatting system. In this system, the owner can make their account online and have a good conversation in the chat. The emergence of computer networks and telecommunication technologies allow people to communicate in a new way. Chatting is a method of using technology to ring people and ideas together despite the geographical barriers. The technology has been available for years, but the acceptance was quite recent. The group chat application will allow multiple users to connect to the server and chat with all other online users. The app works in a broadcast fashion. This means that messages from a user are broadcasted to other users. Messaging apps are surging in popularity. The past few years have brought apps like WhatsApp, Telegram, etc. It is the server that used local host to host to host website.

Keywords- Chatting, Message, Client Login, Cloud, JSON.

I. INTRODUCTION

The emergence of computer networks and telecommunication technologies allows people to communicate in a new way. Chatting is a method of using technology to bring people and ideas together despite geographical barriers. The technology has been available for years, but the acceptance was quite recent. The group chat application will allow multiple users to connect to the server and chat with all other online users. The app works in a broadcast fashion. This means that messages from a user broadcasted to other users. Messaging apps are surging in popularity. The past few years have brought apps like WhatsApp, Telegram, etc.

The main objective of this project is to allow each person to get connects with each other. Some of the other objectives are listed below;

- Providing a social platform to users.
- To allow each person to share their thoughts and views.
- This system can be used as discussion board.
- Connecting people together.

The application is designed as a web application. It provides a general architecture for chat applications, and anyone or organization can use it as the basis for providing instant messaging capabilities. The application is written in an object-oriented language called Java. This project uses spring boot framework. Function flow, lambda play a very important role in the implementation. The application is divided into two parts, server, and client.

The server is hosted on a local computer with Apache Tomcat and will be moved to Cloud AWS at the end of this project, because AWS can make the scaling process simple and cost-effective. But temporarily, the application will remain on the local computer. Clients do not need to install any software on their machine. Only network access is needed for communicating with each other.

II. LITERATURE REVIEW AND PROLEM DEFINITION

With the development and enhancement in internet, more and more people have been choosing network chatting tools for communication. Applications such as these facilitate communication over great distances. Therefore, this application must both be real-time and multi-platform to be used by many users. The web-based real-time chatting application does not need any additional third-party client program, and the visual communication could be

established conveniently. Chat applications have become one of the most important and popular applications on smart phones. It has the capability of exchange text messages, images, and files which it cost free for the users to communicate with each other. All messages must be protected. The aim of the paper is to propose chat application that provides End to-End security that let safely exchange private information with each other without worrying about data.

In addition to the protection of storage. A list of requirements to make secure chat application is presented in this paper and based on these requirements, the application was designed. The proposed chat application was compared with other popular applications based on those requirements as well as it has been tested as a proof for providing End-to-End security. Starting any application or service has many problems but one of the main problems is which tool, language, stack, or framework to build one's service or application on.

As building a real time application has to do with slow latency message delivery which in turn means latency, data transfer size over the network must be as low as possible. Other problems include SMS messaging.

III. PROPOSED METHODOLOGY

Overview Communication is a means for people to exchange messages. It has started since the beginning of human creation. Distant communication began as early as 1800 century with the introduction of televisions, telegraphs and then telephony. Telephone communication stands out as the fastest growing technology, from fixed lines to mobile wireless, from voice call to data transfer.

The emergence of computer network and telecommunication technologies bears the same objective that is to allow people to communicate. All this while, many efforts has been drawn towards consolidating the device into one and therefore indiscriminate the service.

Chatting is a method of using technology to bring people and ideas together despite of the geographical barriers. The technology has been available for years, but the acceptance was quite recent.

This project is an example of a real time chat app; it is made up of the user application which runs on the user mobile and the server application, which runs on any PC on the network. To start chatting the user should get connected to a server where he can do group and private chatting.

Requirements Specifications, User Registration- Functionality for user to create account, Login- Functionality for user to get access, Logout- Functionality for user to delete session, Add friend- Functionality to be friend with each other, Friend list- Functionality to be friend with each other. Remove friend- Functionality to remove friend.

Send message- To send message, Privacy- User privacy, Robustness- Dealing with errors, Performance- Application performance must be better, Usability- Easy for newbie's, Reliability- Trusted by users, Supportability- Being supportive, Portability Application runs in different systems.

1. Use case diagram:

Level 0	Level 1	Level 2	Actor
Chat Application	Authentication System	Register Login Logout	User

Chat Application	Contact Form	Friend List Add Friend Remove Friend	User
Chat Application	Chat Form	Send Message	User
Chat Application	Maintenance	User Profile Database	Admin

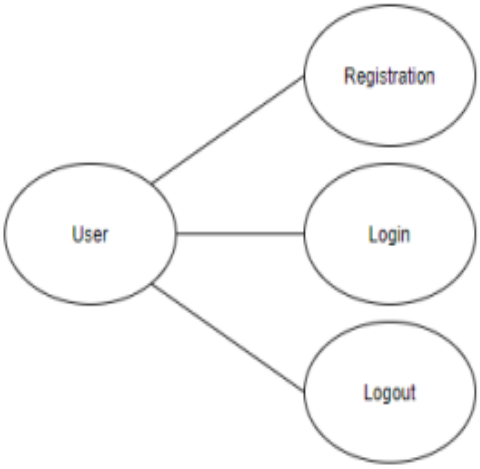

Fig 1. Authentication Service

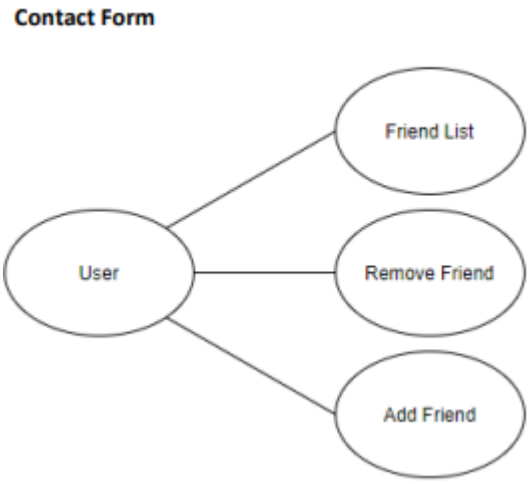

Fig 2. Contact Form.

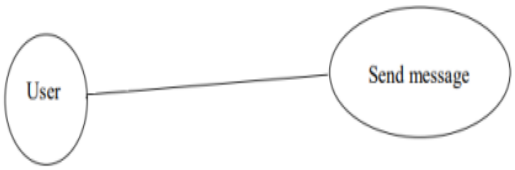

Fig 3. Chat form.

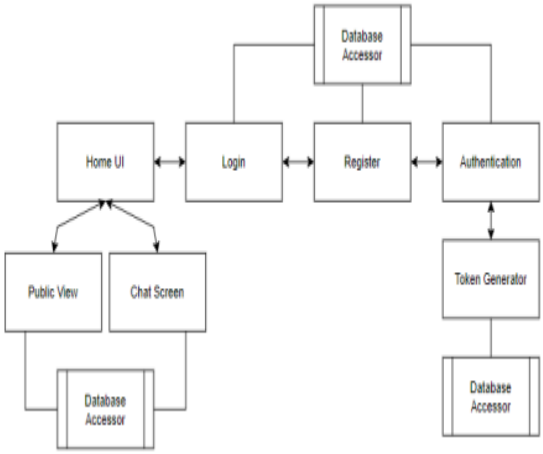

Fig 4. Application Architecture.

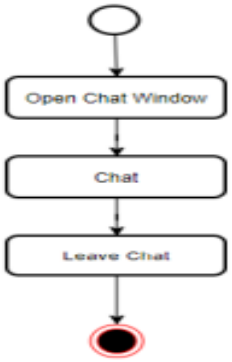

Fig 5. Activity diagram

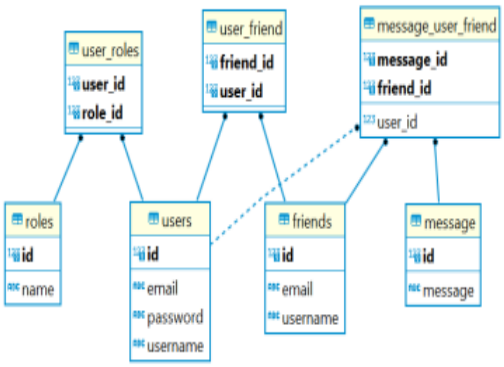

Fig 6. ER Diagram.

IV. IMPLEMENTATION

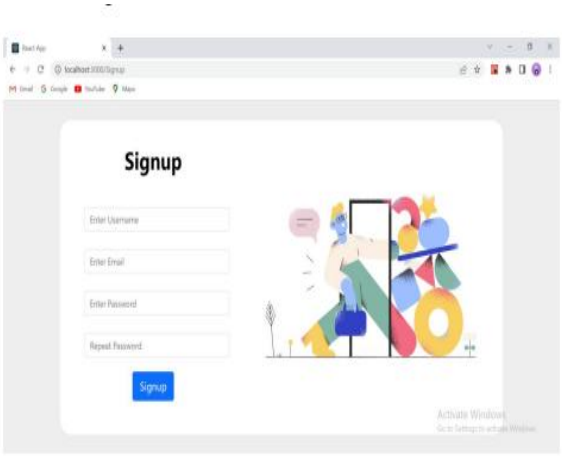

Fig 7. Registration for new user.

To register a new user, it requires username, email, and password. It checks if the username and email already have a user in the database, if it doesn't the user is taken to screen where user has to Login.

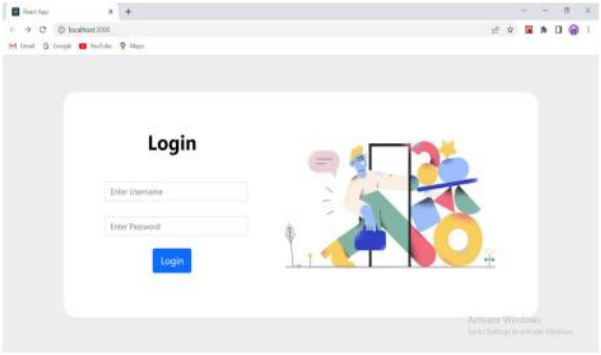

Fig 8. Login User.

It uses spring security to validate the username and password from the database and generates a token,

which then will be used for requesting further requests on the website.

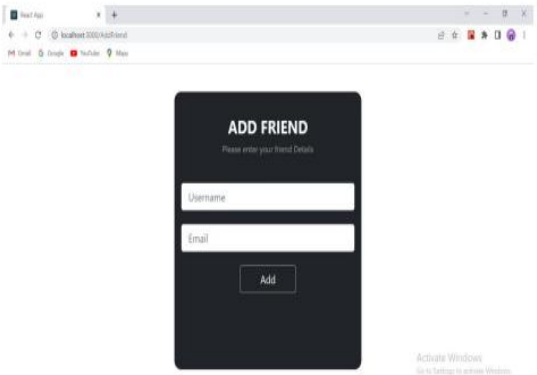

Fig 9. Adding Friend.

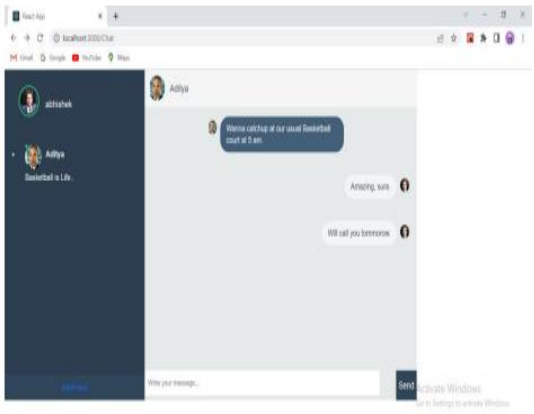

Fig 10. Chat form.

The chat form holds and displays the conversation between two users of the website, which is get/post from server. The chat form has two main items which are the message areas which on-going conversations can be seen and the chat form which carry an input field to send new messages area.

V. RESULTS

This document provides the requirement for the design and implementation of a chat application. Both functional and non-functional requirements are being documented. This project will create a chat application with a server and allow users to be able to chat with themselves. Instant messaging solution will be proffered so that users will be able to communicate seamlessly and ensuring that even a novice can use this chatting application, thereby ensuring it is not too complex, so that it can cut across a wide range of audience.

VI. PROJECT SCOPE AND FEATURES

Broadcasting chat server application is going to be text communication software; it will be able to communicate between two computers using point to point communication. There is limitation on live chat as it does not support audio communication. The easy usability breaks the complexity syndrome.

JWT, or JSON Web Token, is an open standard used to share security information between two parties — a client and a server. Each JWT contains encoded JSON objects, including a set of claims. JWTs are signed using a cryptographic algorithm to ensure that the claims cannot be altered after the token is issued.

VII. LIMITATIONS AND CHALLENGES

The following challenges were observed after development of this system.

- Only registered users can use the system.
- Internet must be available to use the application.
- There must be minimum of two users per time for interactive chatting.

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