Chat Application with Spam Detection

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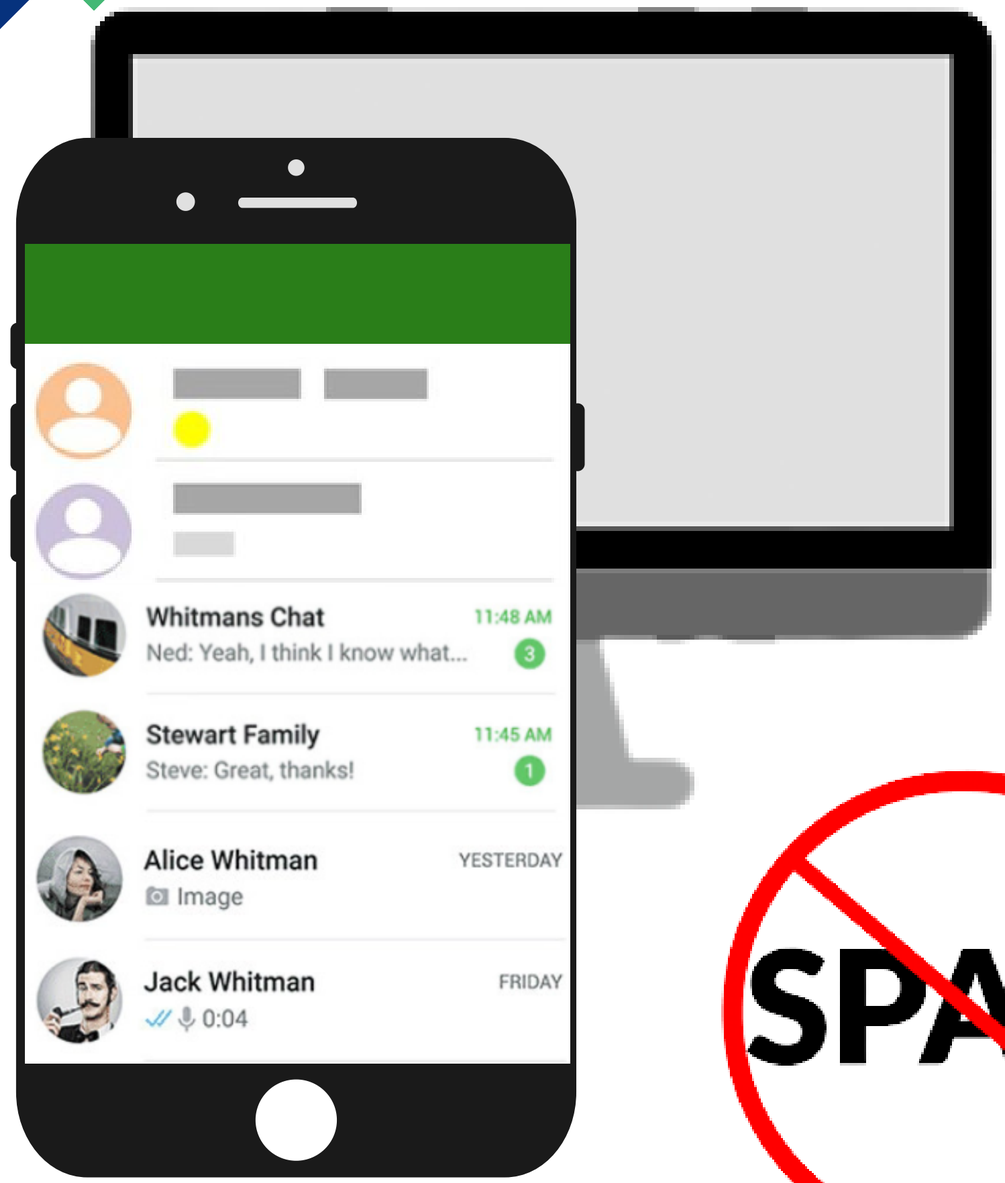


We have selected your phone as a winner. Obtain your prize here within one hour.

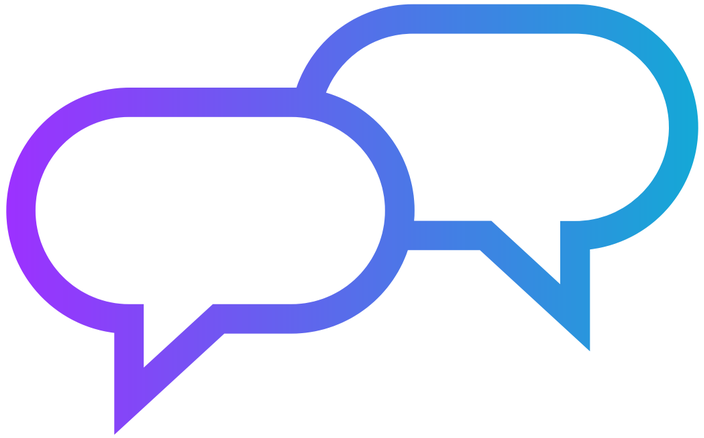
You have a package that needs to be claimed ASAP.

bit.ly

Dear you have passed our interview, wage is 8000 Rs/Day. Please contact to discuss detail: http://wa.me/919165146378 SSBO

Problem Statement

Developing a real time chat application enabled with spam detection functionality using machine learning algorithms.



Objectives

- Spam Detection and filtering
- Positive user perception
- Spam free environment

Motivation

- Prioritize meaningful conversation
- Protect against Spam
- Save valuable time of users

Technology Stack

Front End

React

React Native

BackEnd

python

Mobile App and Web App

Database

PostgreSQL

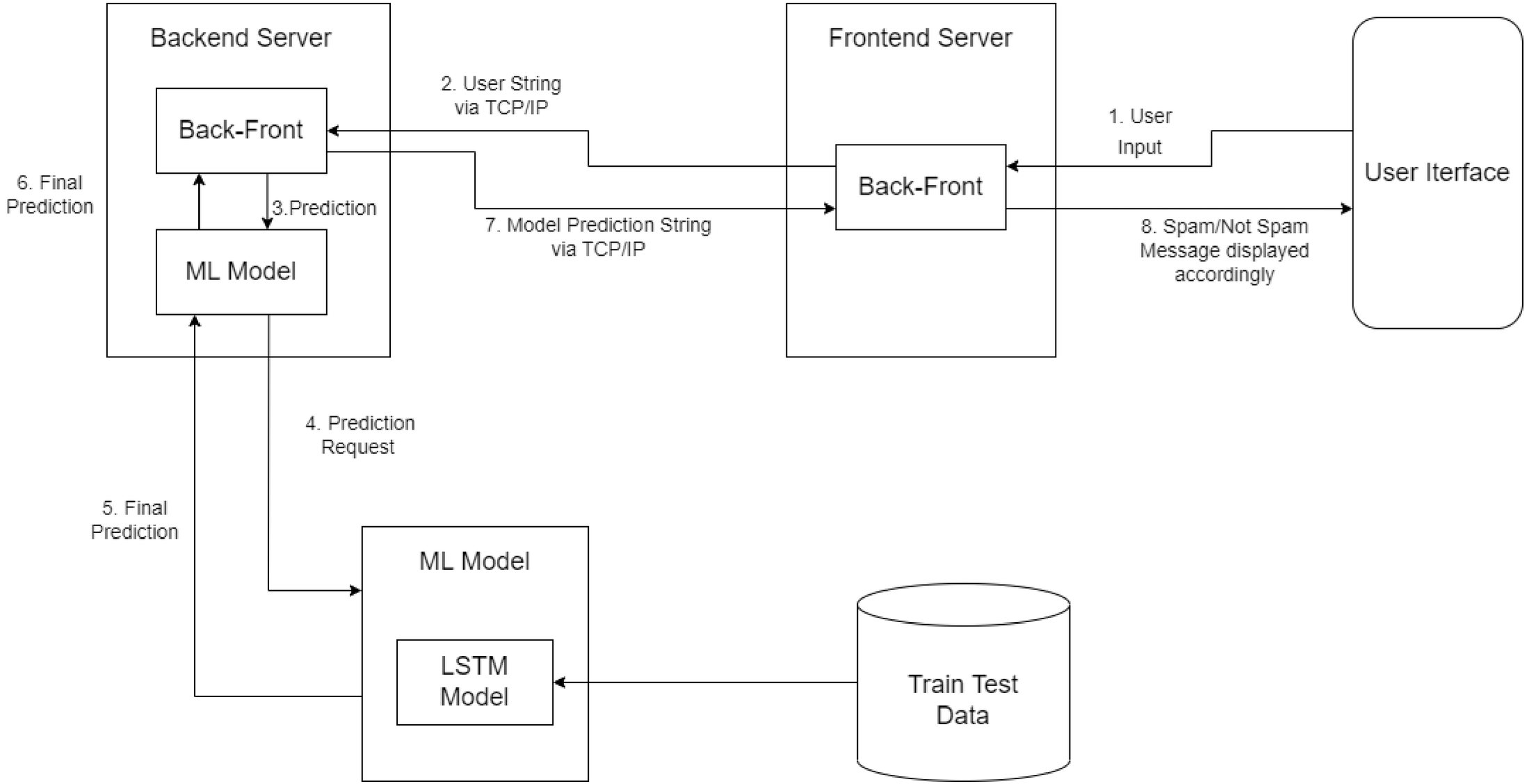
IDE

Visual Studio Code

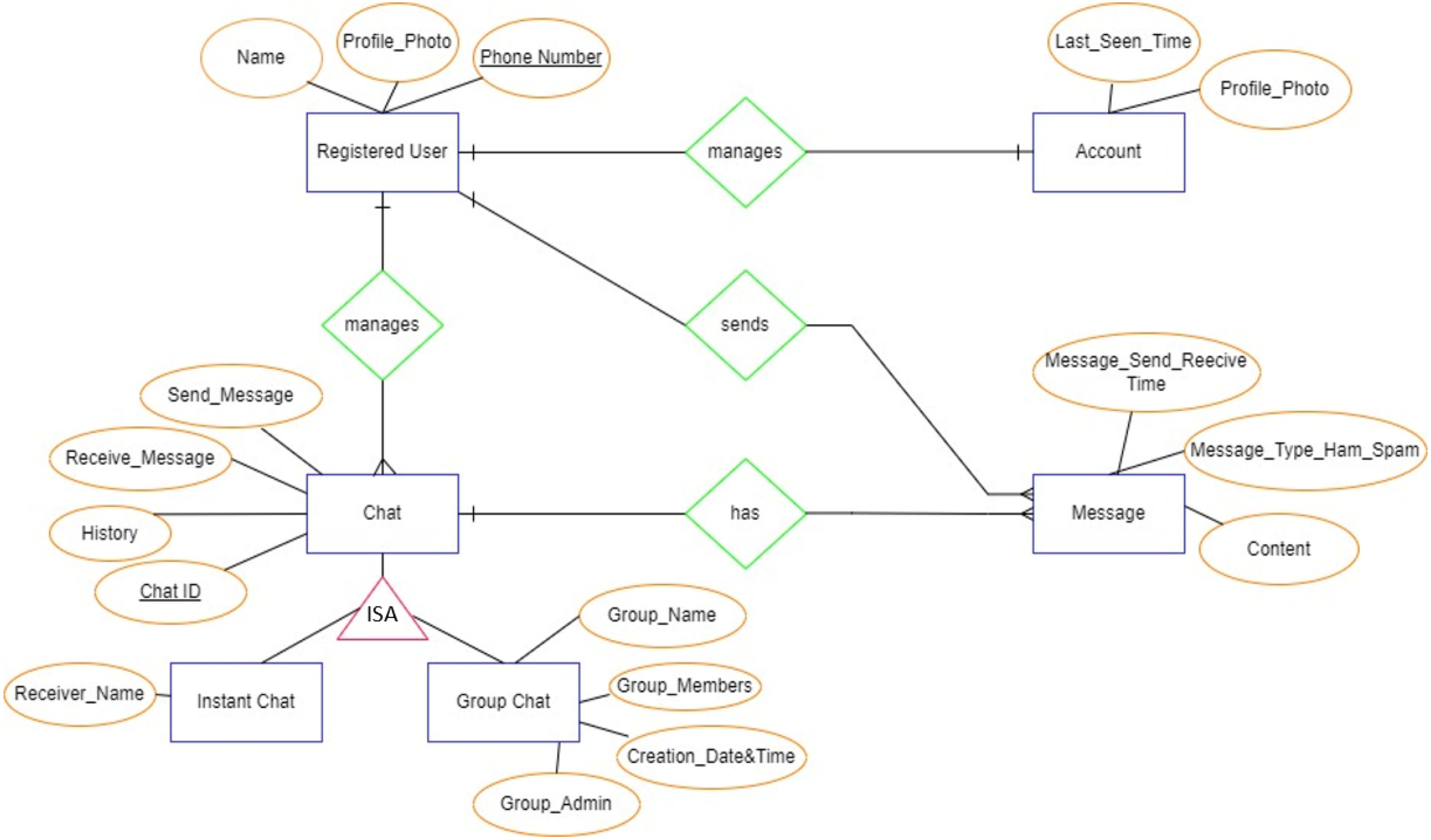
Scope

- Register user
- Login for web app
- Group chat
- Emoji support
- AI powered spam detection
- Autocomplete enabled search
- User settings and profile customization
- File upload and preview
- Video Playback
- Message Reactions
- Slash Command
- Spam Tab for displaying Spam Messages (additional)

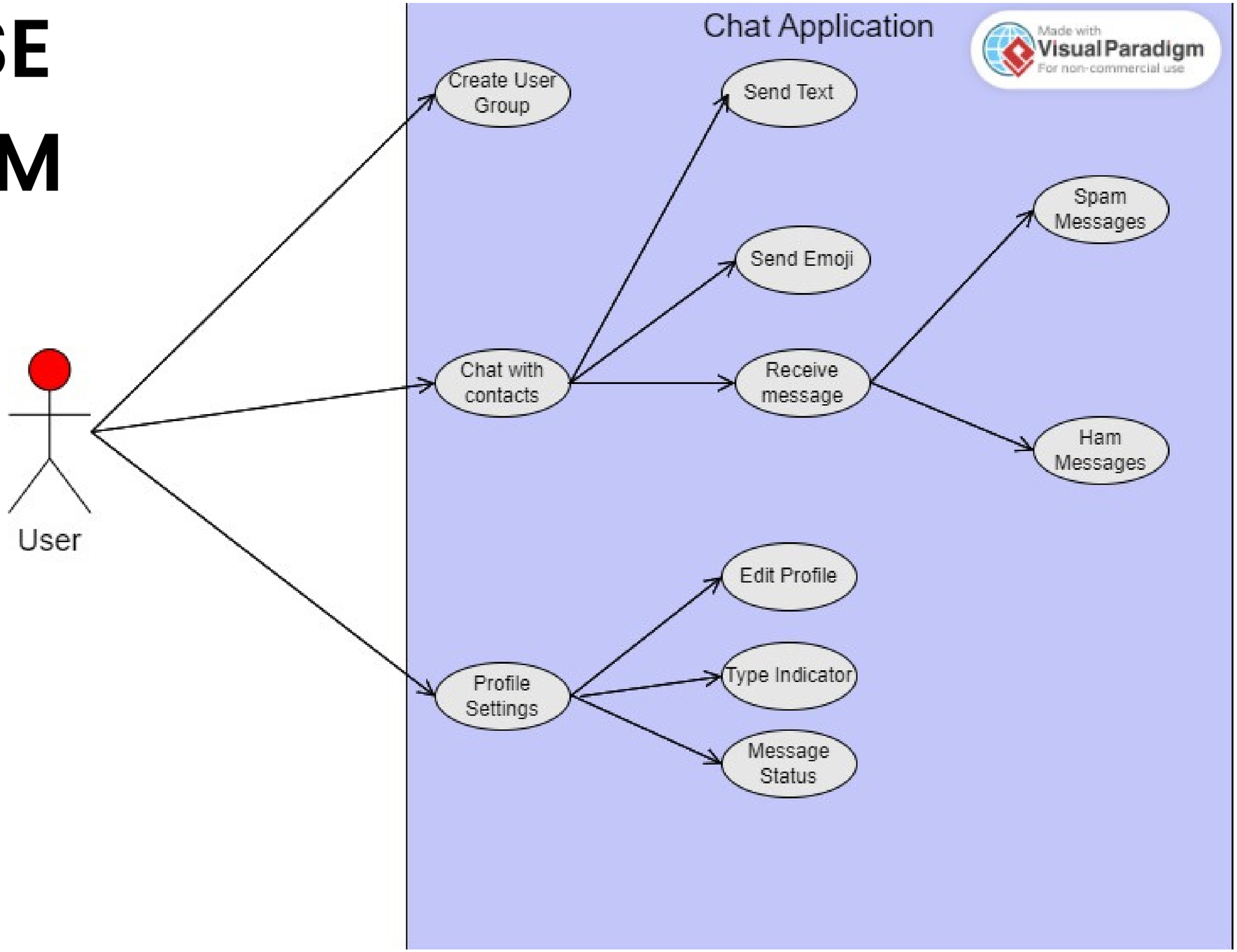
Architecture



ENTITY RELATIONSHIP DIAGRAM



USE CASE DIAGRAM



Literature Review

SRNO	Research Paper	Description	Merits	Demirits
1	Sridevi Gadde,A .Lakshmanarao,S.Satyanarayana, “SMS Spam Detection using Machine Learning and Deep Learning Techniques”, 2021	In this paper, authors proposed a deep learning model for SMS spam detections. The accuracy is compared of the proposed model with previous work.	Author applied various classification algorithms and achieved an accuracy of 99% with the LSTM model. Experimental results showed that LSTM outperforms previous models for spam detection.	The dataset which is being used is UCI with labels, So they applied various supervised learning algorithms for SMS spam detection . The model is tested on only this dataset
2	M.Rubin Julis, S.Alagesan, “Spam Detection In Sms Using Machine Learning Through Text Mining”, 2020	The research examines various machine learning classifiers on a sizable dataset of individual SMS texts	The research work involved a careful study on the different filtering algorithms and existing anti-spam tools.	This research however does not solve the problem of analysis and management of report in spam sms filter storing, which is far more challenging.

SR NO	Research Paper	Description	Merits	Demirits
3	Muhammad Iqbal, Malik Muneeb Abid, Mushtaq Ahmad, Faisal Khurshid, “Study on the Effectiveness of Spam Detection Technologies”, 2016	This paper states different strategies are in place to address spam detection issue, including challenge response models, whitelisting, blacklisting, pattern detection, and various machine learning techniques.	research focuses on methodically examining the benefits and drawbacks of existing technology for spam detection, and a taxonomy of accepted method is presented.	They proposed a solution of merely combining various techniques of finding a probability score to determine whether the given text is spam or not. However, they don’t tell “How to combine those techniques”.
4	Luo GuangJun, Shah Nazir, Habib Ullah Khan, Amin Ul Haq, “Spam Detection Approach for Secure Mobile Message Communication Using Machine Learning Algorithms”, 2020	GuangJun et have suggested a technique for spam identification using machine learning predictive models to address this problem. The technique is used in order to identify spam	99% accuracy was attained using the suggested strategy, which is high compared to other systems already in use	The model is test on only one dataset.

ALGORITHM

Creating SMS Spam-Detection Model using LSTM:

1. Import SMS spam detection dataset from kaggle . https://www.kaggle.com/uciml/sms-spam-collection-dataset
2. Label each SMS with spam or ham accordingly.
3. Perform pre-processing operations on the dataset.
    a. Remove unnecessary columns
    b. Remove stopwords
    c. Vectorize inputs
    d. Tokenization of inputs
    e. Pad each input with 0s so that each input is of equal length
4. Create a 6-layer LSTM model with Dense and Dropout layers in between to avoid overfitting.
5. Train the model using model.fit() function.
6. Store the trained weights.

ALGORITHM

Create a Backend Server:

1. Host the SMS Spam-Detection trained model on the server.
2. Open a port on which the frontend of the chatbot can communicate on.
3. Accept string/user messages from the frontend and give it as an input to the trained SMS Spam-Detection Model.
4. The model will return its predictions to the backend server, which will then send the predictions back to the frontend.

Create a Frontend Server:

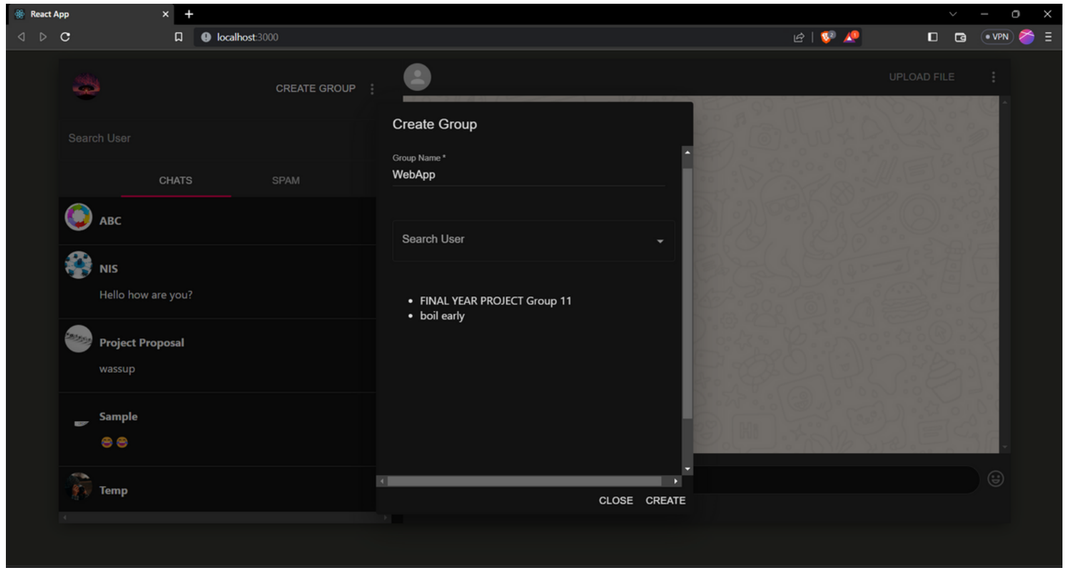
1. Connect the frontend server to the frontend of the Chatbot (Mobile App/Web App)
2. For each client, create a thread to keep each client's request isolated from the other clients.
3. Accept user messages when the user hits the "send" button.
4. Send the messages to the backend server via the communicable port established at the backend server and wait for a response.
5. If the response is "spam", exit.
6. If the response is "ham", send an appropriate response to the user.

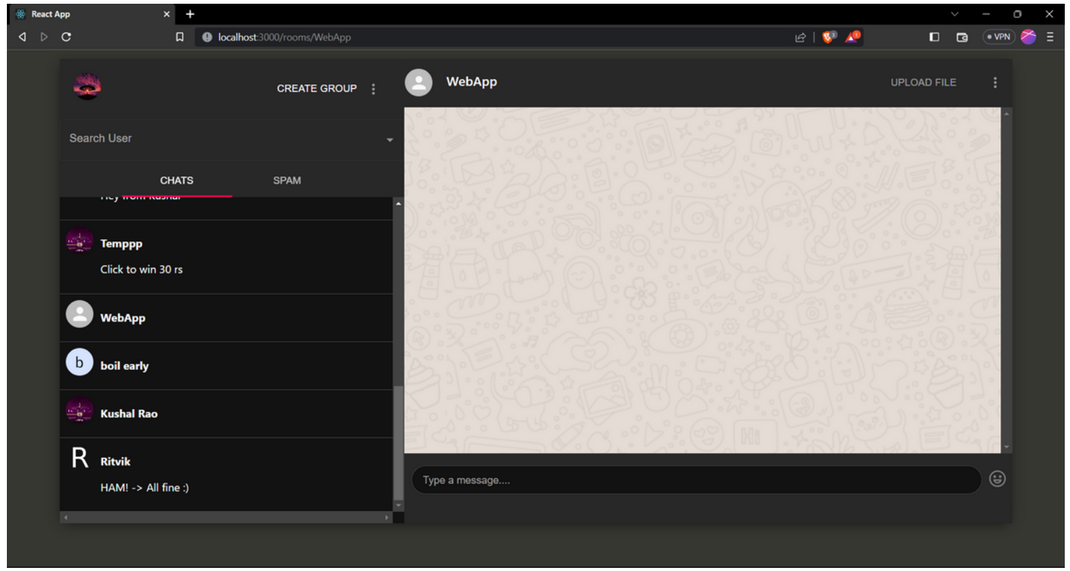
Testing

Test Scenario Description	Test Case ID	Test Case Description	Testing Steps	Pre-requisites	Test Data	Expected Result	Actual Result	Status
Verify Login Functionality in WebApp	TC_01	Login with valid email and valid password	1. Launch the Web app 2. Enter valid email 3. Enter valid password 4. Click on Login	User must have a network connection	email: finalprojectgr11@gmail.com password:xxxxxxxxxx	Successful Login	Successful Login	Pass
	TC_02	Login with valid email and invalid password	1. Launch the Web app 2. Enter valid email 3. Enter valid password 4. Click on Login	User must have a network connection	email: finalprojectgr11@gmail.com password:123456	Pop-up message stating "Invalid Username or Password"	Pop-up message stating "Invalid Username or Password"	Pass
	TC_03	Login with invalid email and valid password	1. Launch the Web app 2. Enter valid email 3. Enter valid password 4. Click on Login	User must have a network connection	email: finalprojectgr@gmail.com password:xxxxxxxxxx	Pop-up message stating "Invalid Username or Password"	Pop-up message stating "Invalid Username or Password"	Pass
	TC_04	Login with invalid email and invalid password	1. Launch the Web app 2. Enter valid email 3. Enter valid password 4. Click on Login	User must have a network connection	email: finalprojectgr@gmail.com password:123456	Pop-up message stating "Invalid Username or Password"	Pop-up message stating "Invalid Username or Password"	Pass
Verify Login Functionality in MobileApp	TC_05	Login with valid email and valid password	1. Launch the Mobile app 2. Enter valid email 3. Enter valid password 4. Click on Login	User must have a network connection	email: finalprojectgr11@gmail.com password:xxxxxxxxxx	Successful Login	Successful Login	Pass
	TC_06	Login with valid email and invalid password	1. Launch the Mobile app 2. Enter valid email 3. Enter valid password 4. Click on Login	User must have a network connection	email: finalprojectgr11@gmail.com password:123456	Pop-up message stating "Invalid Username or Password"	Pop-up message stating "Invalid Username or Password"	Pass
	TC_07	Login with invalid email and valid password	1. Launch the Mobile app 2. Enter valid email 3. Enter valid password 4. Click on Login	User must have a network connection	email: finalprojectgr@gmail.com password:xxxxxxxxxx	Pop-up message stating "Invalid Username or Password"	Pop-up message stating "Invalid Username or Password"	Pass
	TC_08	Login with invalid email and invalid password	1. Launch the Mobile app 2. Enter valid email 3. Enter valid password 4. Click on Login	User must have a network connection	email: finalprojectgr@gmail.com password:123456	Pop-up message stating "Invalid Username or Password"	Pop-up message stating "Invalid Username or Password"	Pass

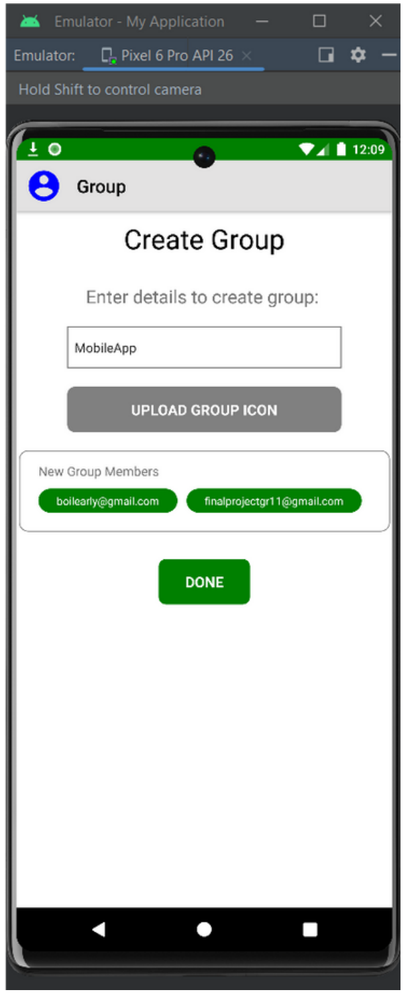
Create New Group in WebApp	TC_09	Create new group for users	1. Launch the Web App 2. Login Successfully 3. Open menu and click on "Create new group" icon 4. Give a group name 5. Select a group picture 6. Select users by searching via email id	User must have a network connection and chat database must have at least 3 registered users	Group name "WebApp" with any picture and 2 selected users	Group Created Successfully	Group Created Successfully	Pass
Create New Group in MobileApp	TC_10	Create new group for users	1. Launch the Mobile App 2. Login Successfully 3. Open menu and click on "Create new group" icon 4. Give a group name 5. Select a group picture 6. Select users by searching via email id	User must have a network connection and chat database must have at least 3 registered users	Group name "MobileApp" with any picture and 2 selected users	Group Created Successfully	Group Created Successfully	Pass
Create Instant Chat with another user in WebApp	TC_11	Start an instant chat with another user	1. Launch the WebApp 2. Login Successfully 3. Type the user's email id in Search Bar 4. Select the user if found	User must have a network connection and chat database must have at least 2 registered users	user: boilearly@gmail.com	Instant Chat created Successfully	Instant Chat created Successfully	Pass
Create Instant Chat with another user in MobileApp	TC_12	Start an instant chat with another user	1. Launch the Mobile App 2. Login Successfully 3. Type the user's email id in Search Bar 4. Select the user if found	User must have a network connection and chat database must have at least 2 registered users	user: boilearly@gmail.com	Instant Chat created Successfully	Instant Chat created Successfully	Pass
Test the classification of spam-ham messages in WebApp	TC_13	Check if ham messages are being displayed in group chat	1. Launch the Web App 2. Login Successfully 3. Select any group 4. Type in a ham message 5. Hit send	User must have a network connection and must have at least 1 group	message: Good morning, How are you doing?	Message is displayed	Message is displayed	Pass
	TC_14	Check if spam messages are being displayed in spam bar	1. Launch the Web App 2. Login Successfully 3. Select any group 4. Type in a spam message 5. Hit send	User must have a network connection and must have at least 1 group	messages: Good morning!	Message is displayed in spam bar	Message is displayed in spam bar	Pass
	TC_15	Check if ham messages are being displayed in instant chat	1. Launch the Web App 2. Login Successfully 3. Select any instant chat 4. Type in a ham message 5. Hit send	User must have a network connection and must have at least 1 instant chat	message: Good morning, How are you doing?	Message is displayed	Message is displayed	Pass
	TC_16	Check if spam messages are being displayed in spam bar	1. Launch the Mobile App 2. Login Successfully 3. Select any instant chat 4. Type in a spam message 5. Hit send	User must have a network connection and must have at least 1 instant chat	messages: Good morning!	Message is displayed in spam bar	Message is displayed in spam bar	Pass

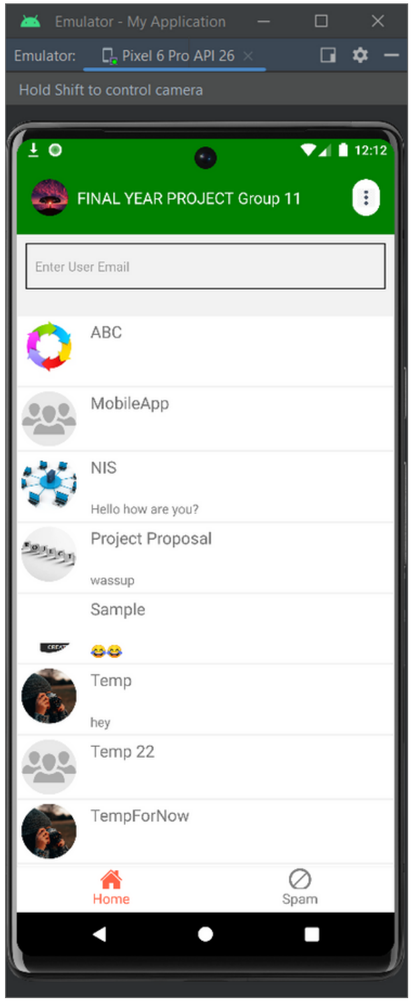
TC_01 Create a new group in web app



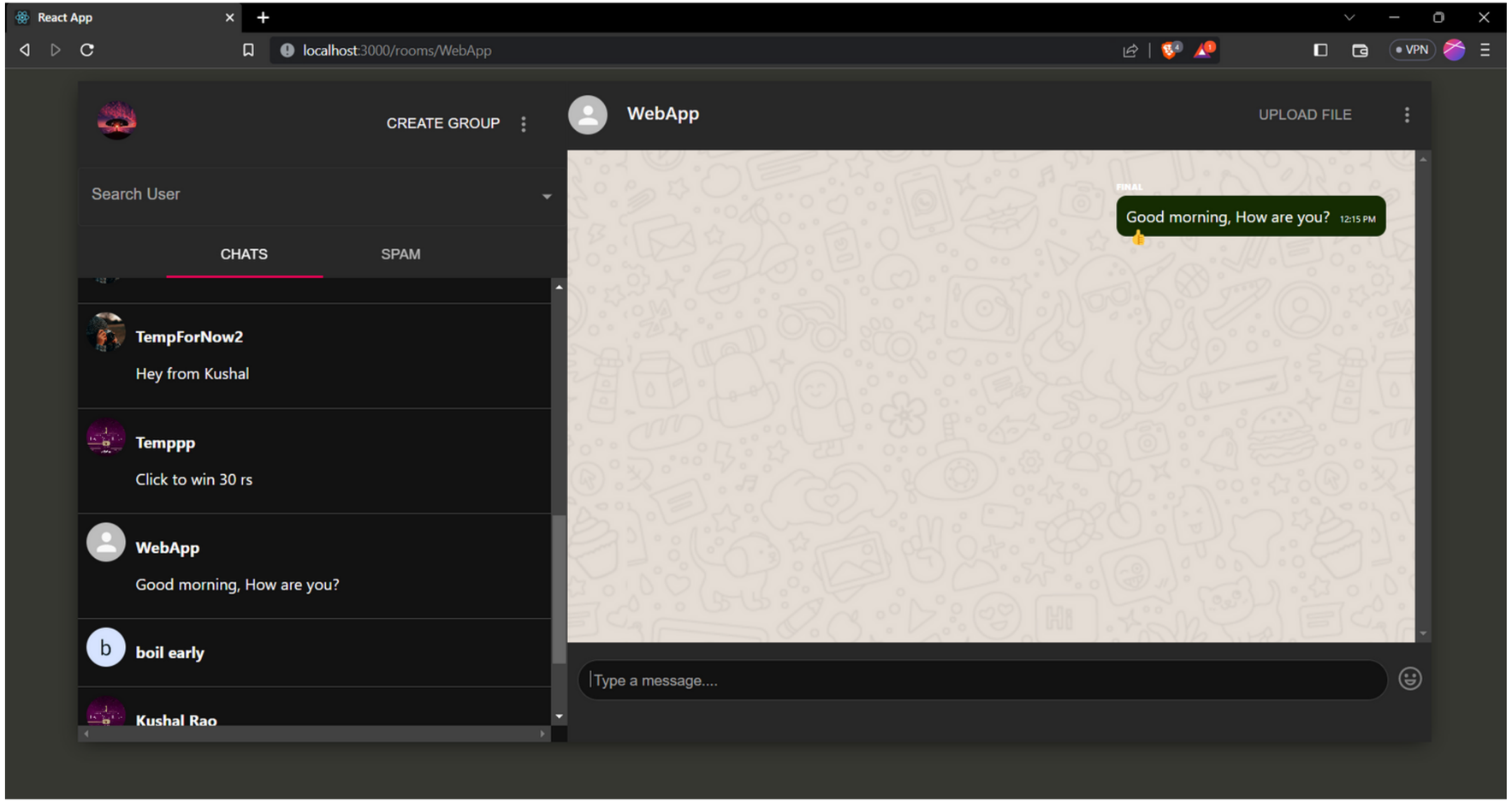


TC_03 Create a new group in mobile app

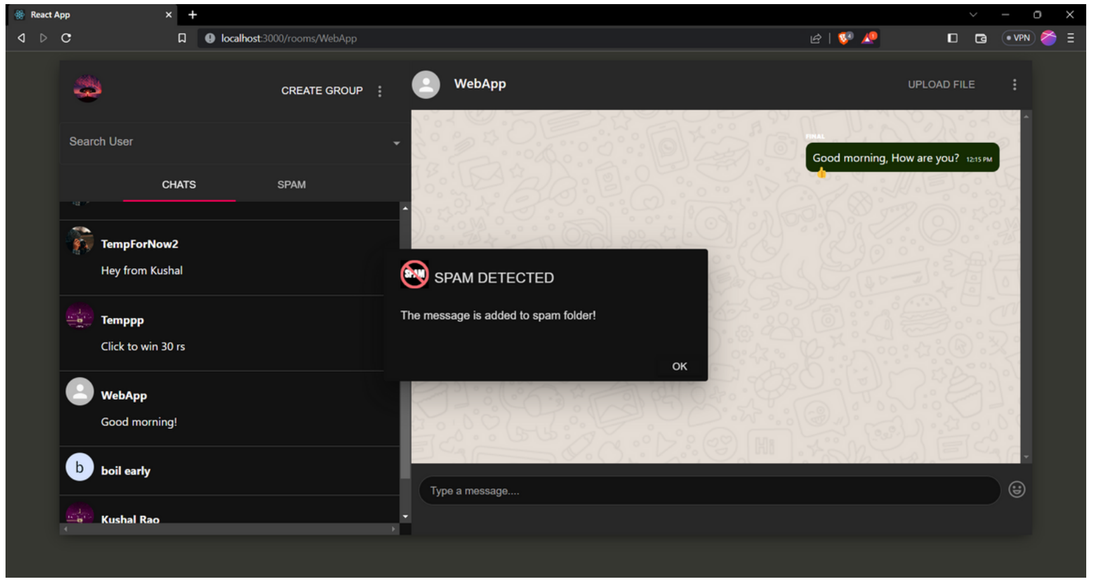


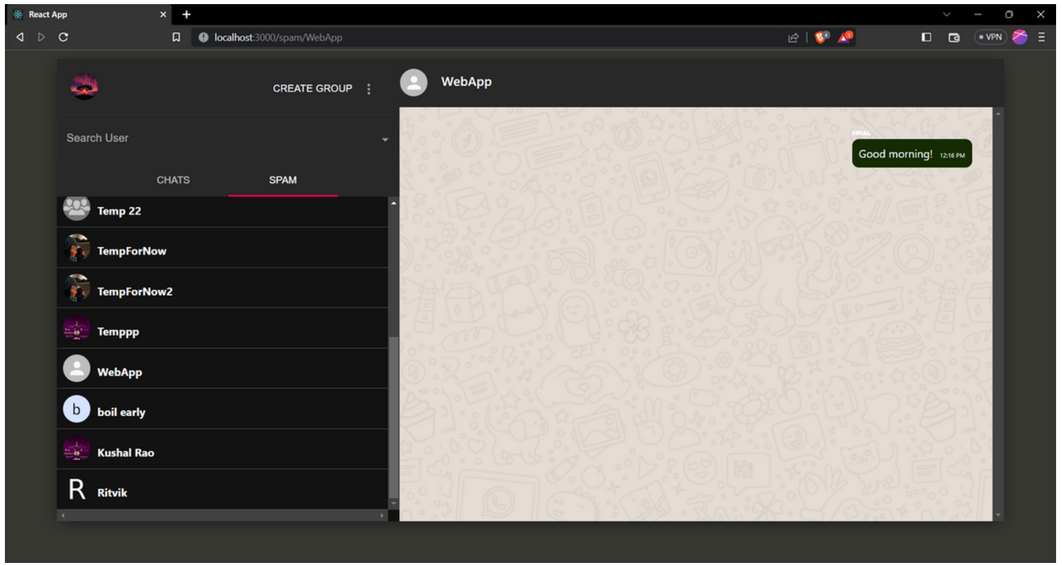


TC_02 Sending ham messages in group chat

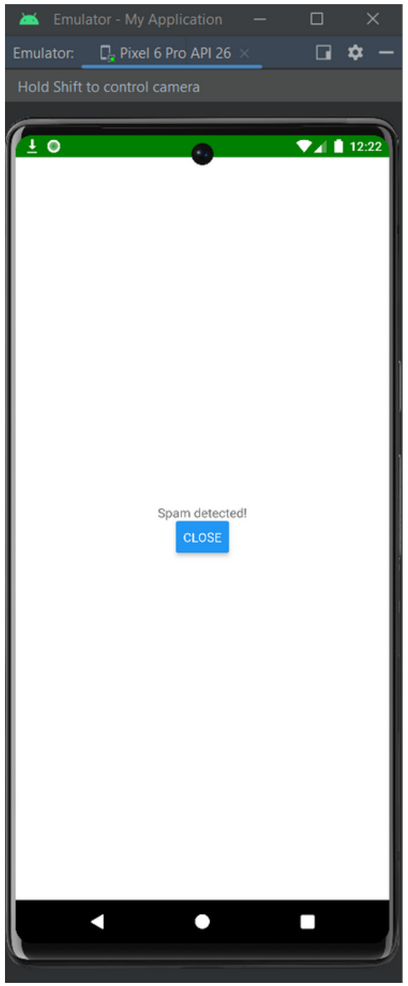


TC_03 Sending spam messages in group chat in web app





TC_04 Sending spam messages in group chat in mobile app



Future Scope

- Audio and Video calling
- One time view for photos
- Story uploads
- Extra controls for group admins
- Block users
- Camera option for media upload
- Collaboration Tools
- Push Notifications
- Message Broadcasting

References

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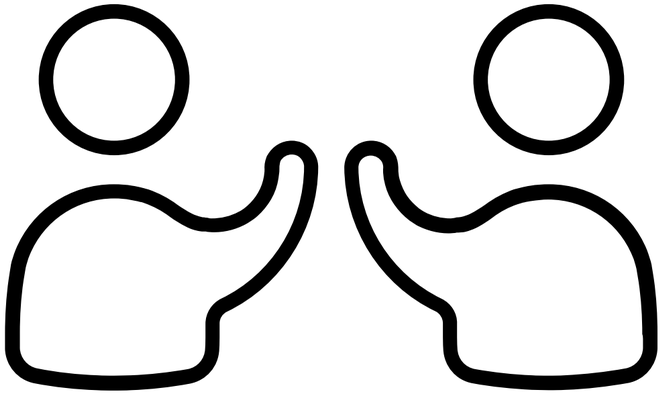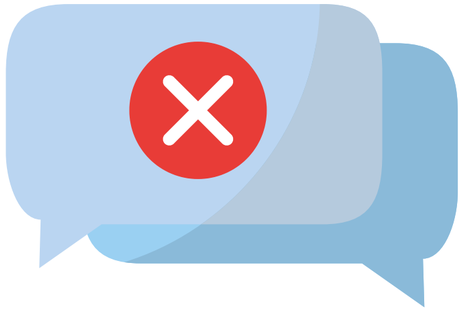
Thank You!