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Implementation Multi-lingual Chatting Web Application

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ABSTRACT:

Chat operation is a point or a program on the Internet to communicate directly among Internet users who are online or who were inversely using the internet. This web application allow users to communicate indeed though from a great distance. Thus, this web application must be real- time and multiplatform to be used by numerous users. This web application manufacture begins with the collection of applicable data that will be displayed in the web interpretation. The programming language used for backend server is Node.js with express frame and Mongo DB database. In this web application we're using React Js, Node Js, Socket.io for the development. These are the arising technologies which are used extensively in numerous operations like Instagram & Facebook. Also we're using Mongo DB for the database purpose.

I. Introduction:

Web application system is a peer-to- peer system where the users change manual communications and files between the system's users. The user of the system is defined as customer- server. web application system is a distributed programming which correspond two distributed factors, web application server and web application client. web application customer supports for all communication including requesting web application server position information from a position server and display entered web application communications. web application server will conduct web application session and manage all web application clients. Principally web application client starts the web application session by requesting the communication parameter (server name and port number). There are two type of communication between client- server which were control communication (used to join and leave web application session, produce web application room and switch to web application room) and chat communication (supports only public web application communication). Transport protocol that's used for a chatting system that's socket.io.

II.Objective:

The objective of this whole project is to manage the conversation and remove the language barrier between the users. For example, International business agents and clients who are used to communicate with each other from different countries with different languages, Foreign students those who are interested in communicating with their friends. Tourists who are used to visits many countries.

The objective of this application is to handle some of the issues listed below:

How can we develop the translation system in chat application?
How important is it to have the translation system in chat applications?
How can be useful auto translate chat application to international tourists, business agents, and students?
What opportunities will available in the developed system?
How can be effective to learning in different languages?
How many languages can use to chat with friend, clients and business partners?

III.Literature Review:

In the Online Chat Application **[1]** The authors have presented the application which provides note of authorization that allows the user to use their account anywhere anytime with the use of any mobiles phone. User needs to send discussion request before sending any communications to any user. When user accept their request either only they send the communications otherwise not. User has to login their application with their mail id and watchword as there is no need of OTP

From this paper it has been observed that online communication allows user to speak with others in a quick and profitable manner. This paper shows

the significance of conversation application in day present life and its impact in technological world.
Where as a conversation system for private network or associations is presented in a paper **[2].**This system guarantees security of the communication and private data that will be shared over the network. It also stores behind the scenes data in secure way .It develops a two way communication system, to add the additional features from other traditional systems that is available in the demand and to allow both group discussion and private discussion that enable easy and fast way of communication between people. This guarantees unlimited data transfer without any restriction of size which make people get connected to others at anytime, from anywhere. To transfer different train formats over the system. To have unlimited size to store communication data.
One more social networking application [3] provides features like Social networking in favored language Image backup, Image theft alert on demand, Landmark detection, OCR, Information on nearly any image. Observed to work with React Framework to make interactive user interface and the web-based real- time chatting application does not need any added third- party account program, and the visual communication could be established alongside. The programming tools used in assembling this application is React.js, Node.js with express framework and Mongo DB database

IV. Conversation Translation:

Conversation Translation is a chat translator application. In this application user is able to translate their text message in two ways. One is copy from anywhere their chat and paste into conversation translation application before translating user need to set the source and destination languages. Another one giving input text via voice reorganization and after converting text into desired language user again need to copy and paste to use the translated text[Figure: 1].

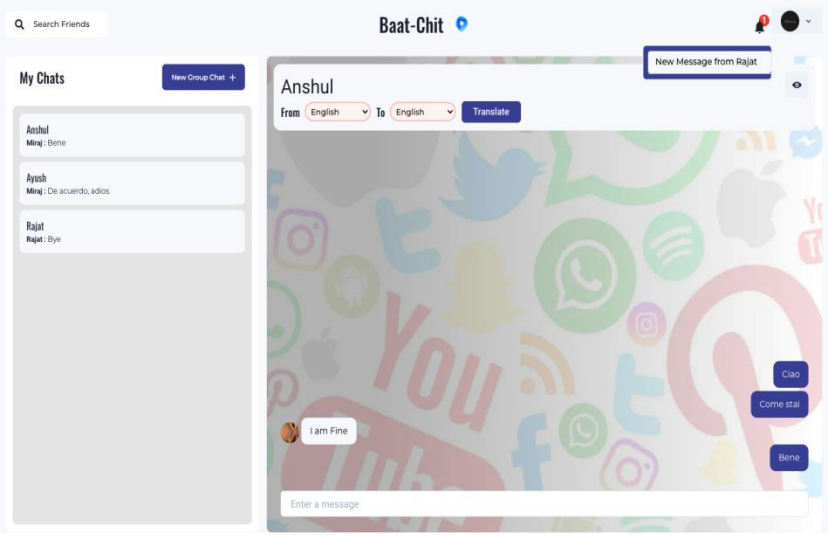
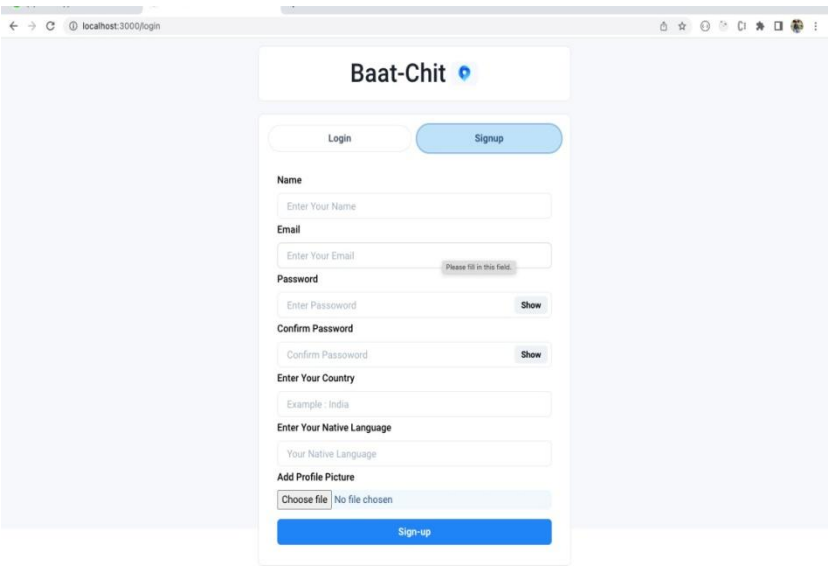


Figure 1 Existing systems Conversation Translation

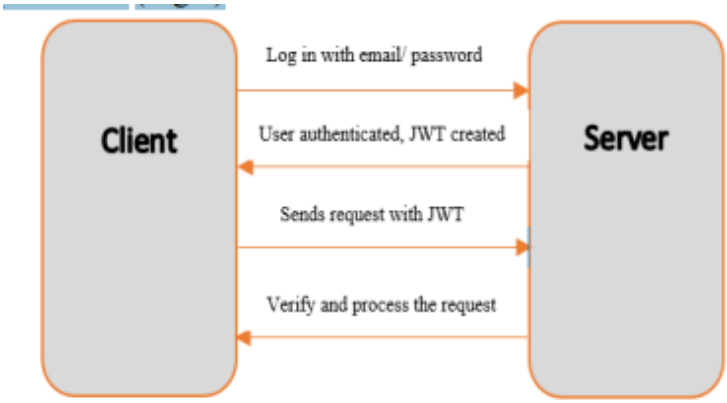
V. Registration Of an account:



Before starting the application, there must have a lock screen to configure the Keystore that provides a secure container to store the local storage key to make more difficult for extraction it from the device by unauthorized persons or other application. Each account has only one device and it is distinguished by device id. In addition, Email and username are unique. Name, email and password are required to register a new account[5]. After typing the registration information, the password is encrypted by using XSalsa20 algorithm then the user credentials are sent to the server. After verification, the server generates a unique identifier that acts as the user ID. After that, the acknowledgement message is received for successful registration to the client application and the client information is stored in local storage. The application generates a set of keys: (a) Key for encrypting the password. (b) A public key pair for calculating session key. (c) Symmetric storage key for encrypting/decrypting local storage contains contact list, chat history and key store.

Login

Email and password are required for user authentication. After typing the authentication information, the password is encrypted then the user credentials are sent to the server. The server checks if the email and password are valid. After validation, JSON Web Token (JWT) is created and sends to the client to store it. When a client makes a request at the later time, JWT is passed with the request. The server verifies of the JWT, if it is valid, the request is processed (Fig.2)



Server Side Implementation

Server-side has relied on Node JS and MongoDB database. Node JS is fast, capable of handling a large number of simultaneous connections with high throughput, which is equivalent to high scalability. MongoDB and Node JS have often used together because of their using

JSON so no need to spend time for transforming the data between them making it easy to deal with each other. In addition, MongoDB provides TLS that makes a secure connection . To perform a client request passes through several steps that are:

Step 1: Initially, must run the MongoDB connection then run the Node JS from Command Prompt. At this stage, the server is ready to receive the client's request.

Step 2: When the client sends a request, the server receives the HTTP request in JSON format. The request then parsed.

Step 3: The HTTP request is compared with the base path if it is matched, it is handed to Express framework.

Step 4: The Express receives the HTTP request and routes it to the specific endpoint that matched it. In case of not matched with any of the routes will display error in Command Prompt. Otherwise, it will be forwarded to the controller which handles the required function.

Step 5: Make a request to MongoDB database by mongoose for processing function.

Step 6: When the data is fetched from MongoDB database and the required operations are done, Node JS receives the response then sends to the client

VI.Algorithm:

The Cipher Algorithms

AES

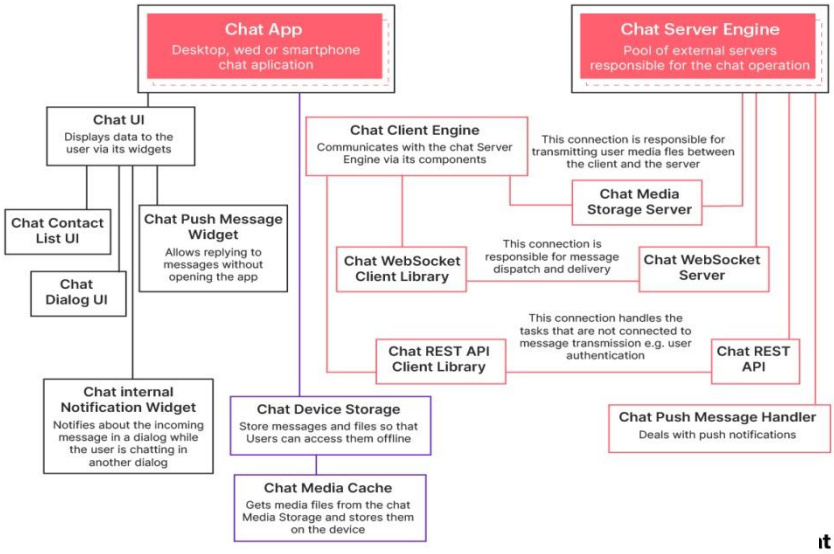
The Advanced Encryption Standard (AES) is a U.S. Federal Information Processing Standard (FIPS). It was selected after a 5-year process where 15 competing designs were evaluated.

Interestingly, AES performs all its computations on bytes rather than bits. Hence, AES treats the 128 bits of a plaintext block as 16 bytes. These 16 bytes are arranged in four columns and four rows for processing as a matrix −

Unlike DES, the number of rounds in AES is variable and depends on the length of the key. AES uses 10 rounds for 128-bit keys, 12 rounds for 192-bit keys and 14 rounds for 256-bit keys. Each of these rounds uses a different 128-bit round key, which is calculated from the original AES key.

```
var encrypted = CryptoJS.AES.encrypt("Message", "Secret Passphrase");
var decrypted = CryptoJS.AES.decrypt(encrypted, "Secret Passphrase");
```

VII.Architecture:



As mentioned above, the implementation and functionality of those components will vary depending on the app's intended use. So, let's cover the core features of a chat app before diving into the deep end of functionality.

1. User Registration and Authentication: If you want users, you have to give people a way to use your chat app. Pretty straightforward. The most common way to register and authenticate users is with their email or phone number.
2. Individual and group messaging: The core feature of a chat app is the ability to send and receive messages. Both individual (peer to peer) messaging and group messaging are essential aspects of a good chat app.
3. Push notifications: You don't want your users to have to open your app every few minutes to check for new messages. That would create a terrible user experience, especially on mobile. Push notifications to notify users of a new incoming message or reaction have become a must-have feature.
4. User settings & profile customization: Customization lets your users express their individuality and creativity. Whether it's the ability to change their font, background color, nickname or something else—it's important to allow users some flexibility to personalize their experience.

VIII. Conclusion:

After a survey on the live chats in various fields we found that there are some issues which are faced on a greater extent and need to be worked on to improve the performance of the Chat Applications. Issues – increase the number of clients to be processed simultaneously, increase the performance rate by reduction in time delay, Memory leak. The online support provided by the business to its clients needs to have high performance as clients prefer carrying out there work online as it saves there time of actually going to the exact location and work out there. If the service provided online is up to the mark then it will surely benefit their business in this internet world today.

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