Design of Real Time Chat Application Implementation of HTML5, CSS AND JAVASCRIPT, SOCKOT.IO

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ABSTRACT

Chat application is an important tool for today's world as it help's everyone to contact from anywhere and talk with them at real time without any problem and this tool resolve the issue of calling every time for any query related anything about that work, Now with the help of chat application user can just send the message to the other user and resolve the issue or query without calling. The best part about the chat application is that we can send the same message to many users at a same time without any problem as we can make a group of so many people or even we can broadcast the message to selected users to whom the sender wishes to send the message. Chat application also provided us the best feature in this as you can share your current location with anyone at any time and even you can share the images or pdf or any other type of file using the application.

INTRODUCTION

As the time going on, the development of information and communication technology is growing so faster and playing very important role in the society. As with the help of the information and communication technologies we can facilitate the people to receive the information and communicate with each other from anywhere, anytime and faster than before. If we see the today's scenario after the technology have been arrived most of the people don't use newspaper for getting the information and even not much uses the news channel now a days for getting information, Majority is using the smart technology for receiving any type of information with the help of smart phones or other devices and if we talk about the chat application, in the chat application everyone is sharing many news there itself only about what's going on around them or in any place in the world, as with the help of the chat application information is spreading so faster than before. Currently, the chatapplication has been developed by many developers and it has its own advantages and disadvantages as every other thing have, and it's giving us more options to decide which thing is better for us and what features are really required in the application and what not, as the review of the users using the application tells a lot about the application and their experience towards the application. The Chat application is fully responsive as it means totally user friendly for every web-based or mobile or any other device users. It is built using Node.js, Socket.io, MongoDB, Passport.js, Auth2.0 and other JavaScript libraries.

Node.js is a software platform that is used to build server side more flexible for applications in a network application. Socket.IO is a JavaScript library and it is an implementation of web sockets protocol and various other required improvisation for real-time chat application. JavaScript is a scripting language that is used to create a program so the HTML document displayed in the browser becomes more interactive and impressive for users. MongoDB is an open source NOSQL

database based on Document-Oriented Database program, which was originally created in C ++. Therefore, It's expected that this chat application can run easily on real time.

OBJECTIVE

The objective can be defined from the main problem given above is that to build a proper real-time multi-platform chat application which can be easily used by people to make their life easy to share the information and communicate with each other easily and faster.

SCOPE

The scope of application should be declared before moving towards the next step. Application scope are as follows:

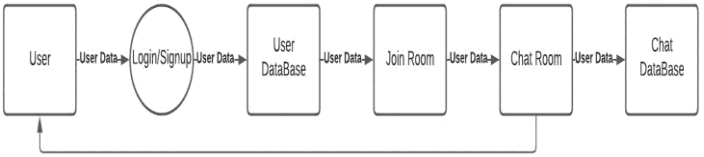
1. Design and construction of this chat application is responsive for every web-based or mobile or other device users.
2. This application is developed using Node.js, socket.io and other JavaScript libraries.
3. Database of the application is stored using MongoDB NOSQL Database.
4. Used by less than 100 people (for testing purpose).

SYSTEM DESIGN

The application is built in two sides one is client and other is server. Client and Server connected bidirectional, when the client sends the message it goes to the server and when the server receives that message, server cannot do anything it could just print on terminal or do something else like dump it file into, but what we want to do is that make sure that everyone is connected to the chat room actually sees the message that this person has sent and at which time. We will bring other clients into mix and this time we send data from server to client.Server will send the client1 message to other clients that client 1 has sent the message, server will send that across to client and client can render that message through browser. In short when any client send the messageit goes to server and then after receiving the message server sends it to all the other clients present in the room at that time.

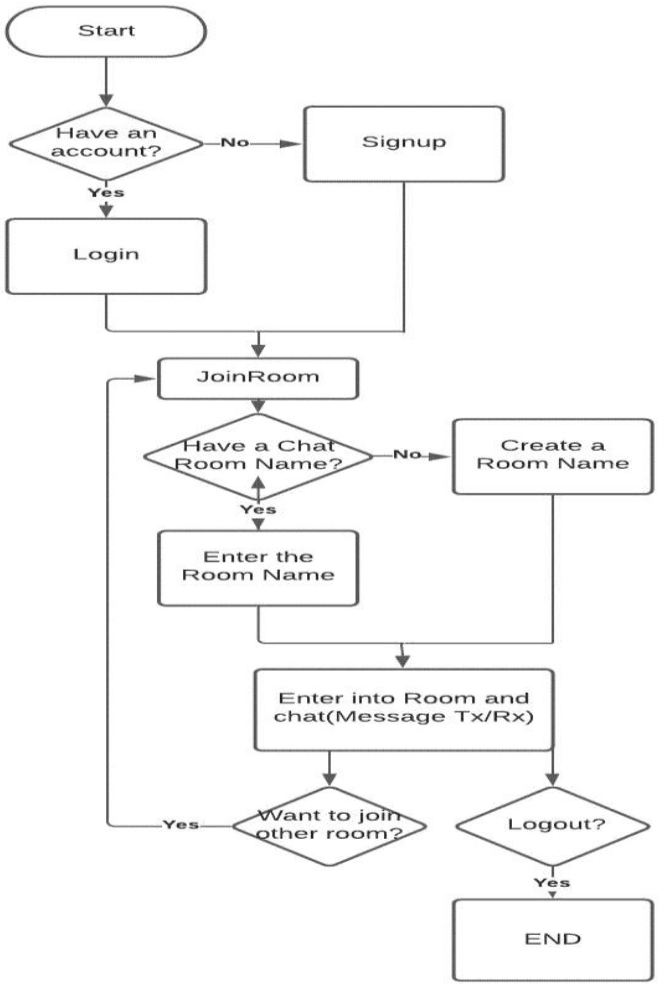
Data Flow Diagram

Here is a data flow diagram to describe overall process of chat application data.



FLOW CHART

Chat application overall process is shown with the help of flow chart below for more clarity.



Database Table Data Structure

Table 1 – User Data Structure

NO	Field Name	Data Type	Explanation
1.	_id	object	User Id
2.	username	string	Email
3.	password	string	Password

4.	googled	string	Googled
5.	googleDisplayName	string	User Google A/C Name
6.	Facebooked	string	Facebooked
7.	facebokDisplayName	string	User Facebook A/C Name

Table 2- Join room Data Structure

No	Field Name	Datatype	Explanation
1	Username	String	Email
2	password	String	Password

TECHNOLOGY

HTML

HTML is a hypertext markup language. Here is an emerging technology, Cascading Style Sheets, which can eliminate much of the HTML table that can be used to control the layout of a web page.[1] A web designer can separate the header, body, and sidebar sections of a web page by placing each section in a separate cell. Alternatively, the network designer can put each link button on the header and sidebar in a separate cell so that he can set unique attributes for each button. Then, in the body of the page, [2]the network designer can separate the text and graphic elements into different cells to adjust spacing and other properties individually.

CSS

CSS can be a formatting language to which you want to add style to your page. This can be done by having the associated CSS document in your html page. The page then has selectors and attributes that affect the tags inside your html document. CSS was introduced in 1996. It was created to prevent people from having to repeat a lot of code. is a style sheet language used for describing the presentation of a document written in a markup language such as HTML or XML (including XML dialects such as SVG, MathML or XHTML).[3] CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript.[4] CSS is designed to enable the separation of presentation and content, including layout, colors, and fonts.[5] This separation can improve content accessibility; provide more flexibility and control in the specification of presentation characteristics; enable multiple web pages to share formatting by specifying the relevant CSS in a separate .css file, which reduces complexity and repetition in the structural content; and enable the .css file to be cached to improve the page load speed between the pages that share the file and its formatting. Separation of formatting and content also makes it feasible to present the same markup page in different styles for different rendering methods, such as on-screen, in print, by voice (via speech-based browser or screen reader), and on Braille-based tactile devices. CSS also has rules for alternate formatting if the content is accessed on a mobile device.[6] The name cascading comes from the specified priority scheme to determine which style rule applies if more than one rule matches a particular element. This cascading priority scheme is predictable.

JavaScript

JavaScript is a powerful client-side scripting language. JavaScript is mainly used to enhance user interaction with the website. In other words, you can make your web content more relatable and [7] interactive with the help of JavaScript. JavaScript is increasingly widely used in game development and mobile application development.

Node.JS

This section contains a brief technical overview of the Node.js platform Node.js is an open-source, cross-stage, back-end JavaScript runtime climate that sudden spikes in demand for the V8 motor and executes JavaScript code outside an internet browser. Node.js allows designers to utilize JavaScript to compose order line devices and for server-side prearranging—running contents server-side to deliver dynamic site page content before the page is shipped off the client's internet browser. Thusly, Node.js addresses a "JavaScript all over" paradigm,[8] bringing together web-application advancement around a solitary programming language, rather than various dialects for server-side and customer side contents.

SOCKET.IO

Socket.IO allows the server to push information to the client in real time, when events occur on the server. For example, if you were playing a

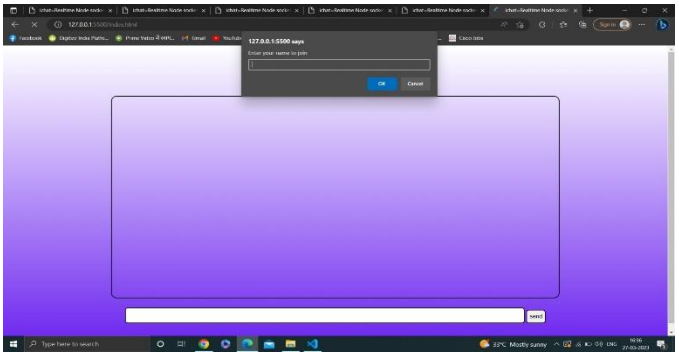
multiplayer game, an event could be your "friend" scoring a spectacular goal against you. With Socket.IO, you'd know (almost) instantly about conceding a goal. Without Socket.IO,[9] the client would have to make multiple polling AJAX calls to verify that the event has occurred on the server. For example, the client could use JavaScript to check for an event on the server every 5 seconds.[10] Socket.IO means that the client doesn't have to make multiple polling AJAX calls to verify if some event has occurred on the server. Instead, the server sends the info to the client as soon as it gets it. Much better. So, Socket.IO allows us to easily build real time applications, such as chat apps and multiplayer games.

IMPLEMENTATION

This paper introduces the concept of certificateless public key cryptography (CL-PKC). [11]In contrast to traditional public key cryptographic systems, CL-PKC does not require the use of certificates to guarantee the authenticity of public keys. [12] It does rely on the use of a trusted third party (TTP) who is in possession of a master key. In these respects, CL-PKC is similar to identity-based public key cryptography (ID-PKC).

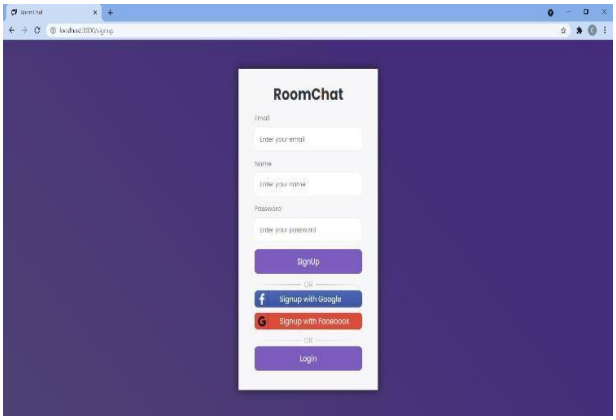
Login Page

If the user has already account they can login using their username and password credentials and user can login their account via google or Facebook account, for login using google account select that google account when it redirects to the selecting of google and same with Facebook login



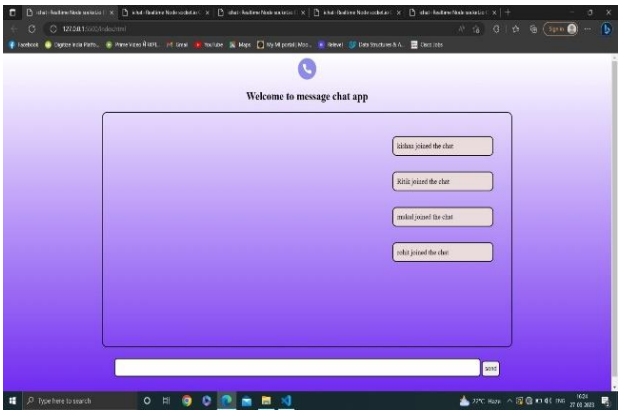
A. Sign up Page

User can create here the account with their user credentials e.g. email, name, password. Other option also given there to sign up using google or facebook account, and while signing up using anyone from these select the account from which user want to sign up into chat application.



B. Chatbox

Chatbot or chatterbot is a software application used to conduct an online chat conversation via text or text-to-speech, in lieu of providing direct contact with a live human agent.



Socket.IO primarily uses the WebSocket protocol with polling as a fallback option,[13] while providing the same interface. Although it can be used simply as a wrapper for WebSockets, it provides many more features, including broadcasting to multiple sockets,[14]storing data associated with each client, and asynchronous I/O.

It can be installed with the Node Package Manager (NPM).[4]

Node.js lets developers use JavaScript to write command line tools and for server-side scripting. The ability to run JavaScript code on the server is often used to generate dynamic web page content before the page is sent to the user's web browser. Consequently, Node.js represents a "JavaScript everywhere" paradigm,[15] unifying web-application development around a single programming language, as opposed to using different languages for the server- versus client-side programming.

Node.js has an event-driven architecture capable of asynchronous I/O. These design choices aim to optimize throughput and scalability in web applications with many input/output operations, as well as for real-time Web applications (e.g., real-time communication programs and browser games)

The Node.js distributed development project was previously governed by the Node.js Foundation,[16] and has now merged with the JS Foundation to form the OpenJS Foundation. OpenJS Foundation is facilitated by the Linux Foundation's Collaborative Projects program.[17]

CONCLUSION

We have seen that making “Real Time Chat Application” is quite interesting thing and new thing to make other than making a website about a product or any portfolio. As, I can say that socket.io made chat application easy to build and develop our own chat application. I can say that because of this project I got to learn a lot more than I expected. In Today’s world chat application is in much demand & needed around everywhere and its reducing our much problem and time, as I told above with the help of the chat application we can just send the same message to many users at a time and we don’t need to call every time to anyone for any type of queries or problem, we can just message them. At last I would like to say that making chat application using Node.js & Socket.io is best for mainly 2 thing, first is reducing time by just texting in some seconds and second one is you will learn a lot while making this app and till completing this application you have good hands on this technology.

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