SRI GURU TEGH BAHADUR INSTITUTE OF MANAGEMENT AND INFORMATION TECHNOLOGY

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY

(2019-2022)

MINOR PROJECT REPORT

(SNEEK CHATROOMs)

SUBMITTED TO:

DR. HARSHITA TULI

SUBMITTED BY:

NITIKA RAWAT
09590202019
BCA 5B

DECLARATION

This is to certify that we have completed the project titled "SNEEK CHATROOMs" under the guidance of "Dr. Harshita Tuli" in the partial fulfillment of the requirement for the award of the degree of "Bachelors in Computer Application" from "SRI GURU TEGH BAHADUR INSTITUDE OF MANAGEMENT AND INFORMATION TECHNOLOGY"
It is also certified that the project of us is an original work and the same has not been submitted earlier elsewhere.

……………………………………

DR. HARSHITA TULI	NITIKA RAWAT BCA 5B (09590202019)

CERTIFICATE

This is to certify that the project titled “SNEEK CHATROOMs” is a academic work done by “Nitika Rawat and Sneha Choudhary” submitted in the partial fulfillment of the requirement for the award of the degree of “Bachelors in Computer Application” from “SRI GURU TEGH BAHADUR INSTITUDE OF MANAGEMENT AND INFORMATION TECHNOLOGY” under my guidance and direction.

To the best of my knowledge and belief the data and information presented by them in the project has not been submitted earlier elsewhere.

………………………………..

DR. HARSHITA TULI
ASSISTANT PROFESSOR
SGTBIMIT

ACKNOWLEDGEMENT

The present report is an amalgamation of hard work and contribution of experience of eminent personalities. The project could not have been completed without the guidance of **Dr. Harshita Tuli,** who not only served as our supervisor and mentor but also encouraged us throughout my training program,

She patiently guided us throughout and never accepting less than our best effort.

We take this opportunity to express our gratitude and offer my thanksgiving to our mentor for project and providing us an environment which enhances our knowledge.

NITIKA RAWAT
BCA 5B
(09590202019)

ABSTRACT

Communication is a mean for people to exchange their thoughts and express themselves in all ways possible, be it be gestures, words, dance, music humans can communicate in many ways they just need someone who understands their ways of expressing things. Similarly nowadays many people are adapting to online chatting which is also one out of the many ways of expressing and communicating. With the emergence of computer network and telecommunication technologies bears the same objective that is, to allow people to communicate regardless of how much distance is between them. Therefore, chatting is a method that using technology to bring people and ideas together despite of geographical barriers.

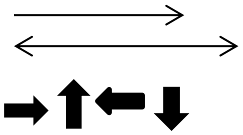
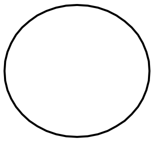
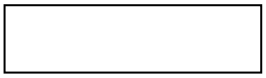
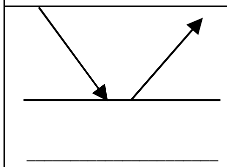
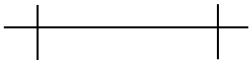
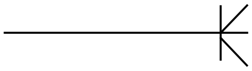
Our project CHAT APPLICATOIN is an example of a chatting platform. It is a single page web application made by using JavaScript framework React JS and firebase services that allows its users to easily communicate with their friends and family by allowing user to create chat rooms, and also it gives user the opportunity to make new friends. This application can run on laptop as well as on mobile screen. To start chatting our client should sign-in using Google authentication and get connected to server where they can do group and private chatting by creating chat rooms.

The proposed system is a global chat-room platform allows its user to create chat room and start communicating to people. It allows its users to create their global presence by maintaining their profile details.

TABLE OF CONTENT

LIST OF FIGURES

LIST OF SYMBOLS

SYMBOL	NAME	FUNCTION
	Data Flow Arrows	Connect process (one way process, Two/Both way process)
	Process	Perform some transformation of its input data to yield output data.
	Source or sink	A source of system inputs or sink of system outputs
	Data Store	A repository of data, the arrowhead indicate net input and net outputs to store
	One to One	Represents one to one relationship in database representation.
	One to Many	Represents one to many relationships in database representation.

1. INTRODUCTION

1.1 Introduction

Communication is a mean for people to exchange their thoughts and express themselves in all ways possible, be it gestures, words, dance, music humans can communicate in many ways they just need someone who understands their ways of expressing things. Similarly nowadays many people are adapting to online chatting which is also one out of the many ways of expressing and communicating. With the emergence of computer network and telecommunication technologies bears the same objective that is, to allow people to communicate regardless of how much distance is between them. Therefore, chatting is a method that using technology to bring people and ideas together despite of geographical barriers.

Our project CHAT APPLICATOIN is an example of a chatting platform. It is a single page web application made by using JavaScript framework React JS and firebase services that allows its users to easily communicate with their friends and family by allowing user to create chat rooms, and also it gives user the opportunity to make new friends. This application can run on laptop as well as on mobile screen. To start chatting our client should sign-in using Google authentication and get connected to server where they can do group and private chatting by creating chat rooms.

1.1.1 Proposed System:

The proposed system is a global chat-room platform allows its user to create chat room and start communicating to people. It allows its users to create their global presence by maintaining their profile details.

1.1.2 Key Features of Proposed System:

- Easy user log-in/sign-in.
- Chat rooms for chatting.
- Chatting with their friends and family.
- Sharing files, pictures, audio and documents easily.
- Make new friends.
- User friendly application. Maintains one’s privacy
- Easy navigation through web application.
- Easy user data maintenance.

1.1.3 Advantages for Users:

- User can create chat rooms
- User can chat with their friends and family. Also can make new friends.
- User can manage its profile: username and profile photo update option.
- User can view other member’s profile.
- Easy navigation.
- Easy sharing and download of files: images or other document files.
- User friendly.

2. REQUIREMENT AND ANALYSIS

Project Title: SNEEK CHATROOMS

2.1 Software requirements and analysis

2.1.1 Category: Web Application.

2.1.2 Purpose:

The project carried out under the title of "**SNEEK CHATROOMS**" is sincere efforts towards providing it's user a global chatting platform that provides its users an easy and convenient online communication with people across world. The proposed system is a global chat-room platform allows its user to create chat room and start communicating to people. It allows its users to create their global presence by maintaining their profile details.

2.1.3 Scope:

The web application is developed based on real life. Communication is a mean for people to exchange their thoughts and express themselves in all ways possible, be it gestures, words, dance, music humans can communicate in many ways they just need someone who understands their ways of expressing things. Similarly nowadays in this pandemic situation many people are adapting and finding an escape to online platforms like chatting, which is also one out of the many ways of expressing and communicating. With the emergence of computer network and telecommunication, technologies bears the same objective that is, to allow people to communicate regardless of how much distance is between them. Therefore, chatting is a method that using technology to bring people and ideas together despite of geographical barriers.

The application will provide users with easy navigation allowing users to enjoy the most of it. User can create chat room, join a chat room, like messages as a way of expressing that they liked it, can make new friends, share files, share images, do text chatting, audio chatting, delete their messages, become group admin, make someone else group admin, remove admin access from someone etc. Thus all these features make application very interactive. Additional features can always be added. Database can be modified accordingly anytime.

2.1.4 Functional Requirements:

"Functional requirements describes what a system should do"

Functional requirements of our system are given below:

- User must have valid Google account thus creating and maintain their individual profiles.
- User should be able create their chat room and thus will be admin of their chat room.
- User should be able to grant admin access to other person or one user can grant admin access to another user.
- Admin of chat room should be able to edit chat room name and description of room and be able take admin access from another admin of chat.

- User should be able to like someone else’s message and be able delete their own messages.
- User should be able to move through chat rooms easily
- User should be able share files and images and also will be able to download them.
- Admin should be able to make any new update and add any new feature.

2.1.5 Non- Functional Requirements:

Requirements that specify criteria that can be used to judge the operation of a system are called non-functional requirements. Non-functional requirements of our system are mentioned below:

- Secure access of confidential data (user’s data).
- Maximum time availability.
- Better components design to get efficient at peak time.
- Better database management service(firebase)

. 2.1.6 Software Tools

- Language Used: HTML, CSS, SASS, JavaScript, React JS framework.
- Platform for Development: Visual Studio Code 2010.
- Database: Firebase real-time database (No SQL).
- Web Browser: Google Chrome, Mozilla Firefox.

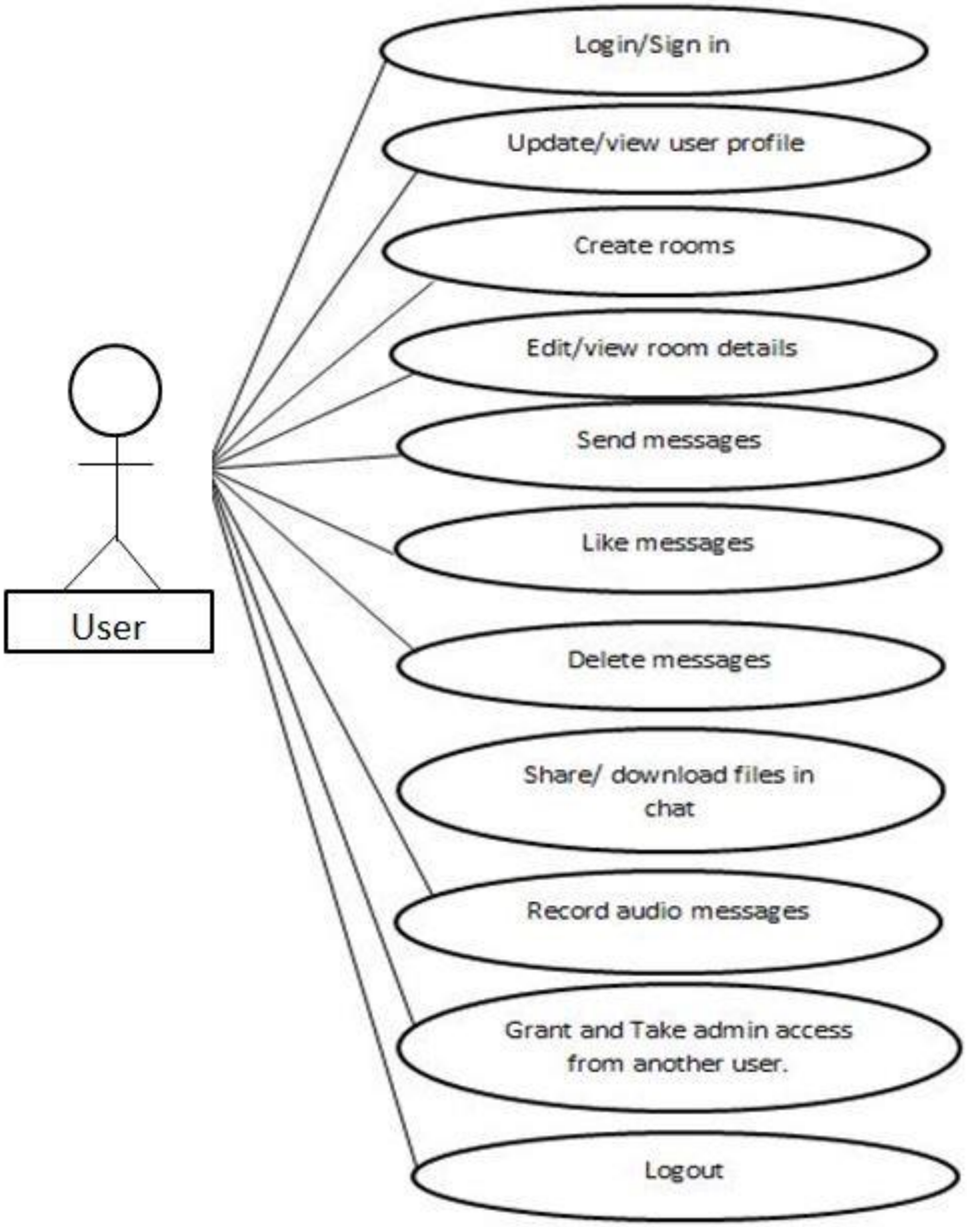
2.1.7 Deployment:

- Operating System: Windows 8 (and above).

2.1.7 Hardware Tools:

- Intel Dual Core Processor i3 (and above).
- RAM: 4GB minimum (and above).
- Operating system- 64-bit based OS (minimum) and advance.

2.2 Use Case Diagram



3. SOFTWARE DESIGN

3.1 Introduction

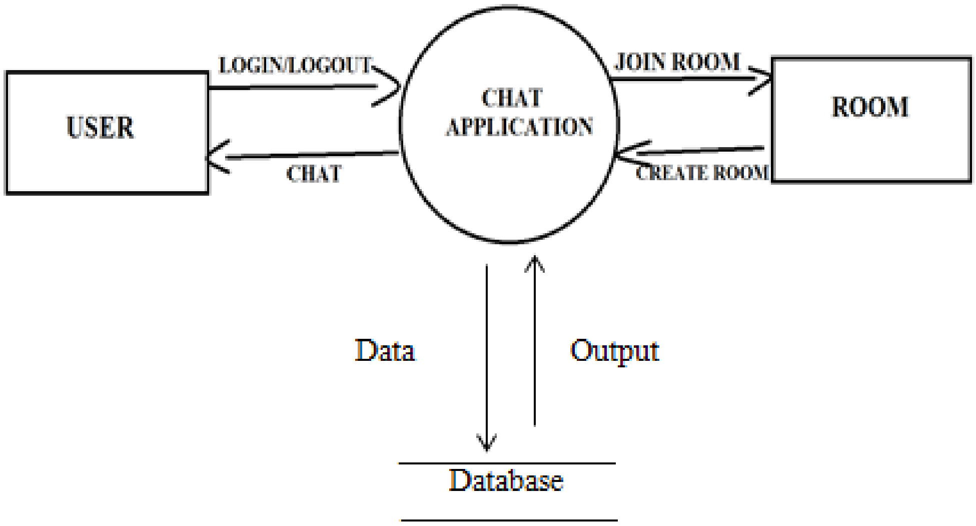
This section will focus on the design of the system using diagrams to illustrate graphically certain sections of the software system.

3.2 High Level/ Detailed Design (HL/DD)

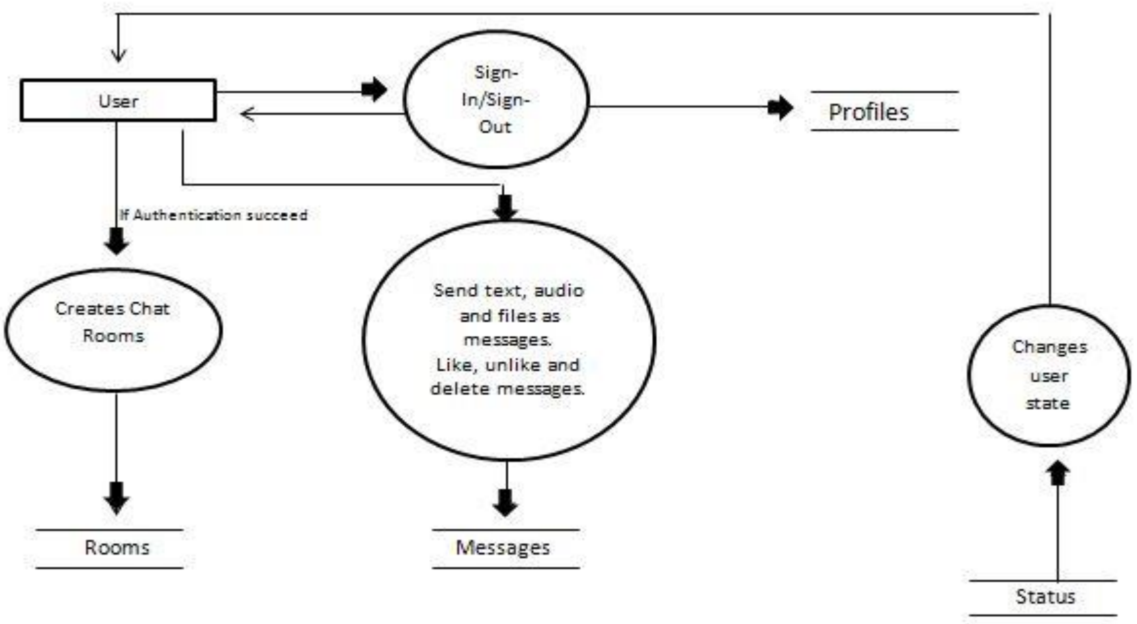
3.2.1 Data Flow Diagrams (DFDs)

As information moves through software, it is modified by a series of transformations. A data flow diagram is a graphical representation that depicts information flow and the transforms that are applied as data move from input to output. The data flow diagram may be used to represent a system or software at any level of abstraction. In fact, DFDs may be partitioned into levels that represent increasing information flow and functional detail. Therefore, the DFD provides a mechanism for functional modeling as well as information flow modeling.

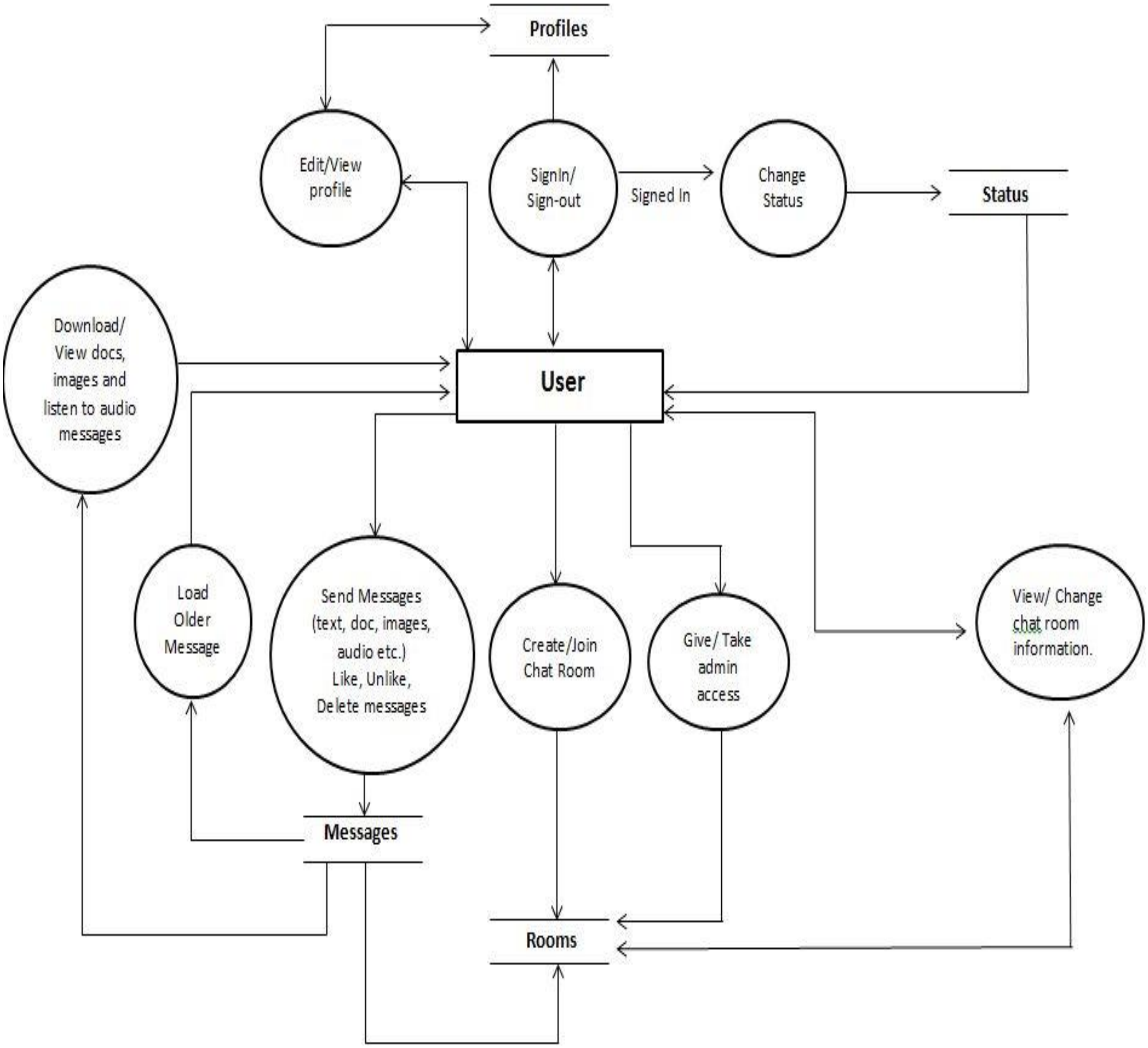
3.3DFD Level 0



3.4 DFD Level 1


User
Sign-In/Sign-Out
Profiles
If Authentication succeed
Creates Chat Rooms
Send text, audio and files as messages. Like, unlike and delete messages.
Changes user state
Rooms
Messages
Status

3.5 DFD Level 2


Profiles
Edit/View profile
SignIn/ Sign-out
Signed In
Change Status
Status
Download/ View docs, images and listen to audio messages
User
Load Older Message
Send Messages (text, doc, images, audio etc.) Like, Unlike, Delete messages
Create/Join Chat Room
Give/ Take admin access
View/ Change chat room information.
Messages
Rooms

4. DATABASE DESIGN

4.1 Introduction

Many developers, accustomed to using RDBMS for decades, may not be aware of the advantages that NoSQL databases bring to applications built for today's internet. In our application we are using Firebase real-time database which is NoSQL, which uses key: value approach. Key-value stores employ a simple schema, with data stored as a simple collection of key-value pairs. Keys are unique, and the value associated with a key can range from simple primitives to complex objects. Because of this simple model, key-value stores can be incredibly fast for both reads and writes, and they are easily scalable.

Advantages of NoSQL include:

- Ability to easily accommodate evolving schemas and data models as applications grow and change.
- Scaling for massive amounts of data spread out across multiple data stores.
- High-speed performance for querying that associates complex and related data.
- Support for analytics operations through complex queries.
- Flexibility in deployment options — on-premise, in a private cloud, or in the public cloud.

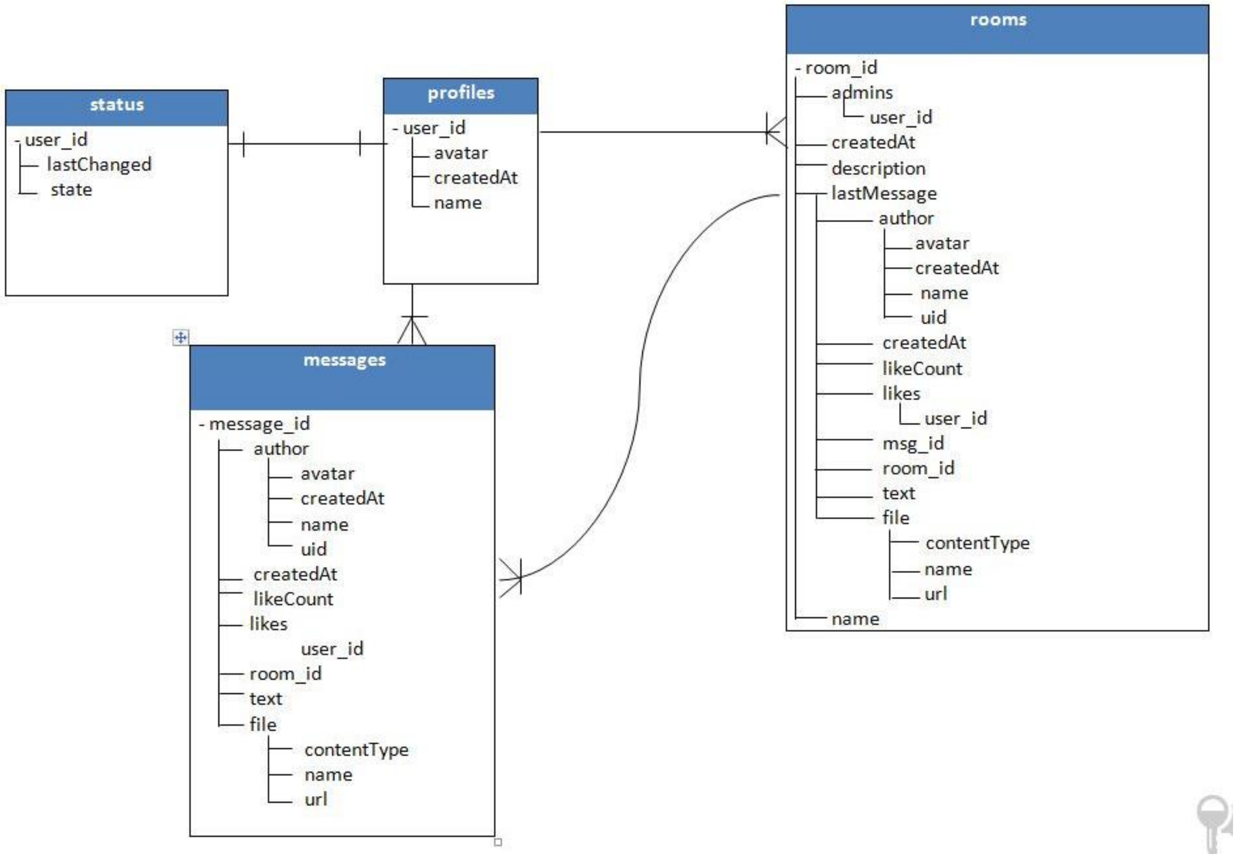
4.1.1 Firebase Real Time Database:

The Firebase Real-time Database is a cloud-hosted database. Data is stored as JSON objects and synchronized in real time using key value pairs to every connected client.
The Real-time Database is a NoSQL database and as such has different optimizations and functionality compared to a relational database.

4.1.2 NoSQL Data Modeling in firebase as JSON object:

```
{
 "rules": {
  "profiles":{
   "$user_id":{
    ".read":"$user_id === auth.uid",
    ".write":"$user_id === auth.uid"
   }
  },
   "rooms":{
    ".read":"auth !== null",
   "$room_id":{
    ".read":"auth !== null",
    ".write":"!data.exists() || data.child('admins').child(auth.uid).val() == true",
    "lastMessage":{
      ".write":"auth !== null"
     }
   }
  },
  "messages":{
    ".read":"auth !== null",
    ".write":"auth !== null",
      ".indexOn":"roomId",
   "$message_id":{
    ".read":"auth !== null",
    ".write":"auth !== null"
   }
  },
  "status":{
   "$user_id":{
    ".read":"$user_id === auth.uid",
    ".write":"$user_id === auth.uid"
   }
  },

  ".read": false,
  ".write": false
 }
}
```

4.2 Data Model Diagram



5. TESTING

5.1 Introduction

Executing a program with the intent of finding errors is called testing. Testing is vital to the success of any system. Testing is done at different stages within the development phase. System testing makes a logical assumption that if all parts of the system are correct, the goals will be achieved successfully. Inadequate testing or no testing at all leads to errors that may come up after a long time when correction would be extremely implementation. The testing of the system was done on both artificial and live data. In order to test data test cases are developed.

Following are the various methods that are employed for testing:

5.2 Methods Employed For Testing

5.2.1 Unit Testing

In unit testing the module is tested independently. It is done to test that the module does satisfy the functional specification. This is done to check syntax and logical errors in programs. At the time of preparation of technical specifications, unit test data was also prepared. The coding for that program was considered after verifying its output against this test data.

Following are the unit testing methods:

- In Conditional Testing, the logical conditions that are given in the module were checked to see whether they satisfy the functionality of the module. This is done by using the test data was prepared.
- In Loop Testing, different loops in the module like nested loops were tested using the data. Attempts to execute the loops to their maximum range are done.

5.2.2 Integration Testing

In Integration testing whole system was checked when all the individual modules were integrated together in order to test whether the system is performing as according to the requirements specified. Interface errors if any were corrected.

Test data was prepared was fed into the system to check whether the system fails to detects an error.

5.2.3 Functional Testing

This is done for each module/sub module of the system. Functional testing serve as a means of validating wheatear the functionality of the system confers the original user requirement i.e. does the module do what it was supposed to do? Separate schedules were made for functional testing. It involves preparation of test data, writing test cases, testing for conformance to test cases and preparation of bug's listing for non- conformities.

5.2.4 System Testing

System testing is done when the entire system has been fully integrated. The purpose of the system testing is to test how the different modules interact with each other and whether the entire system provides the functionality that was expected.

System testing consists of the following steps:

- Program Testing
- System Testing
- System Documentation
- User Acceptance Testing

5.3 Test-Cases (TC)

The test-cases is basically a list of test cases that need to be run on the system. Some of the test cases can be run independently for some components (report generation from the database, for example, can be tested independently) and some of the test cases require the whole system to be ready for their execution. It is better to test each component as and when it is ready before integrating the components.

6. ROLES AND RESPONSIBILITY

6.1 Project Roles and Responsibilities

6.1.1 Role:

- Work as developer and designer of the application.

6.1.2 Responsibilities:

- Work on definition of development requirements and priorities.
- Development of application.
- Data migration.
- Interfaces with other systems.
- Reporting configuration and deployment.
- Set up and maintenance of security rights and access permission.
- Contributing to technical strategy, policy and procedure.

7. CONCLUSION AND FUTURE SCOPE

7.1 Conclusion

In a nutshell our project SNEEK CHATROOMs chat application is a single page web base application developed in order to chat among friends, colleagues, family members. We have made this chat application with JavaScript framework React JS and firebase for hosting and maintaining firebase real time database and other services like storage. React is one of the most popular and powerful front-end technology tools around the world used by well recognized organizations like Facebook, Netflix etc. for their website development. It offers excellent performance in any application. In addition to this React JS offers good compatibility on different platforms, browsers and devices. After developing the chat application it is clear that React JS is an easy to learn and convenient to implement.

We conclude by saying that this chat application is a useful project that help it users to interact and chat with other people.

7.2 Future Scope

With the knowledge we have gained by developing this application, we are confident that in the future we can make this application more effectively by additional features like:

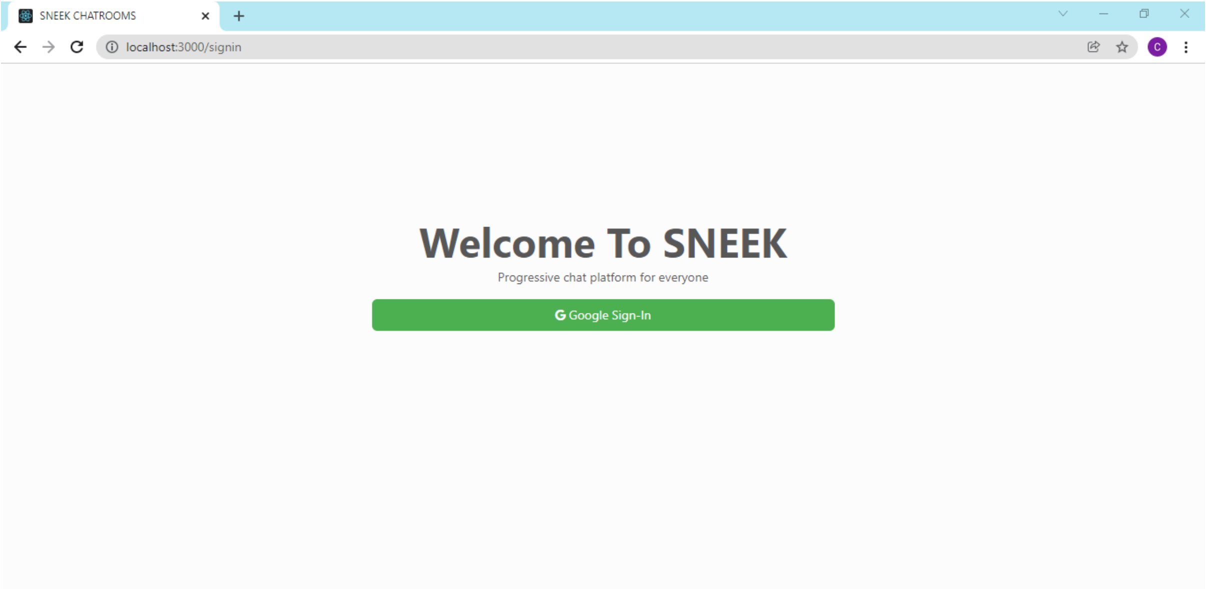
- Hosting
- Reopening modules with real time mechanism
- Private rooms with permission by room admin to allow third party to enter.
- Real time video and audio calling.
- More options for user sign in like Facebook, Git Hub etc.
- Multi language keyboard with features like stickers, gifs etc.
- More interactive and attractive UI.
- More efficient data management.
- Additional features to ensure privacy for user of application

8. APPENDICES

```
<!---SignIn.js----->

import React from 'react';
import firebase from 'firebase/app';
Import { Container, Grid, Row, Panel, Col, Button, Icon, Alert} from 'rsuite';
import { auth, database } from '../misc/firebase';

const SignIn = () => {
    const signInWithProvider = async (provider) =>{
        try
        {
        const { additionalUserInfo, user} = await auth.signInWithPopup(provider);

        if(additionalUserInfo.isNewUser){
            await database.ref(`/profiles/${user.uid}`).set({
             name : user.displayName,
             createdAt : firebase.database.ServerValue.TIMESTAMP
          });
        }
         Alert.success('Signed-In', 4000);
        }
        catch(err)
        {
            Alert.error(err.message, 4000);
        }
    };

   const onGoogleSignIn = () => {
        signInWithProvider(new firebase.auth.GoogleAuthProvider());
    };


    return(
        <Container>
        <Grid className="mt-page">
        <Row>
        <Col xs={24} md={12} mdOffset={6}>
        <Panel>
        <div className = "text-center">
        <h1>
            Welcome To SNEEK
        </h1>
        <p>
            Progressive chat platform for everyone
        </p>
        </div>
        <div className = "mt-3">
            <Button block color="green" onClick={onGoogleSignIn}>
                <Icon icon = "google" /> Google Sign-In
            </Button>
        </div>
        </Panel>
        </Col>
        </Row>
        </Grid>
        </Container>
    );

};

export default SignIn;
```

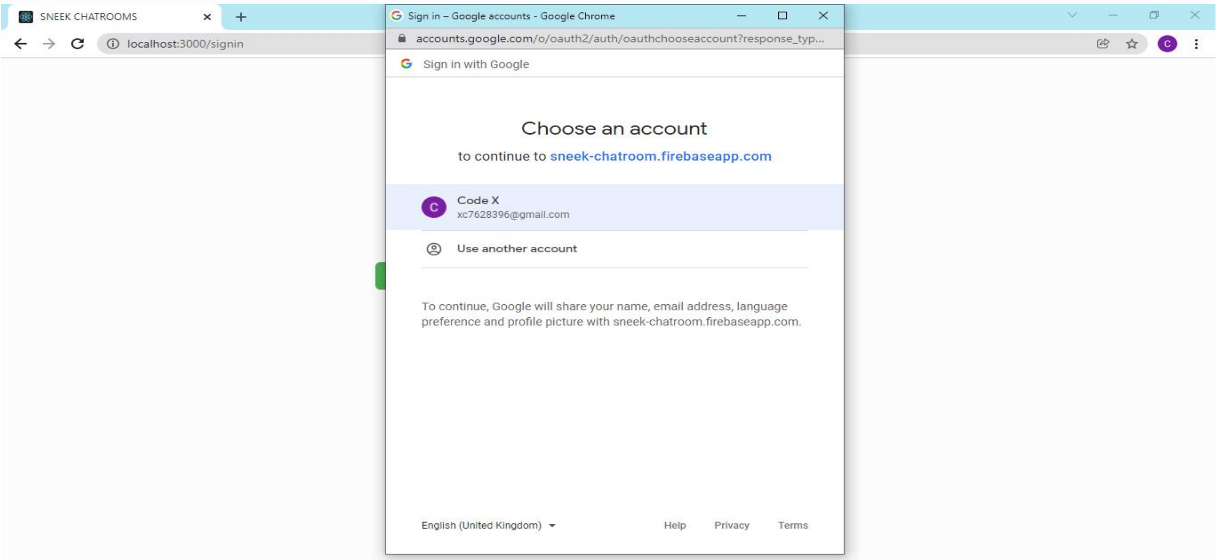
8. SCREENSHOTS

1. SIGN IN WITH GOOGLE



Welcome To SNEEK

Progressive chat platform for everyone

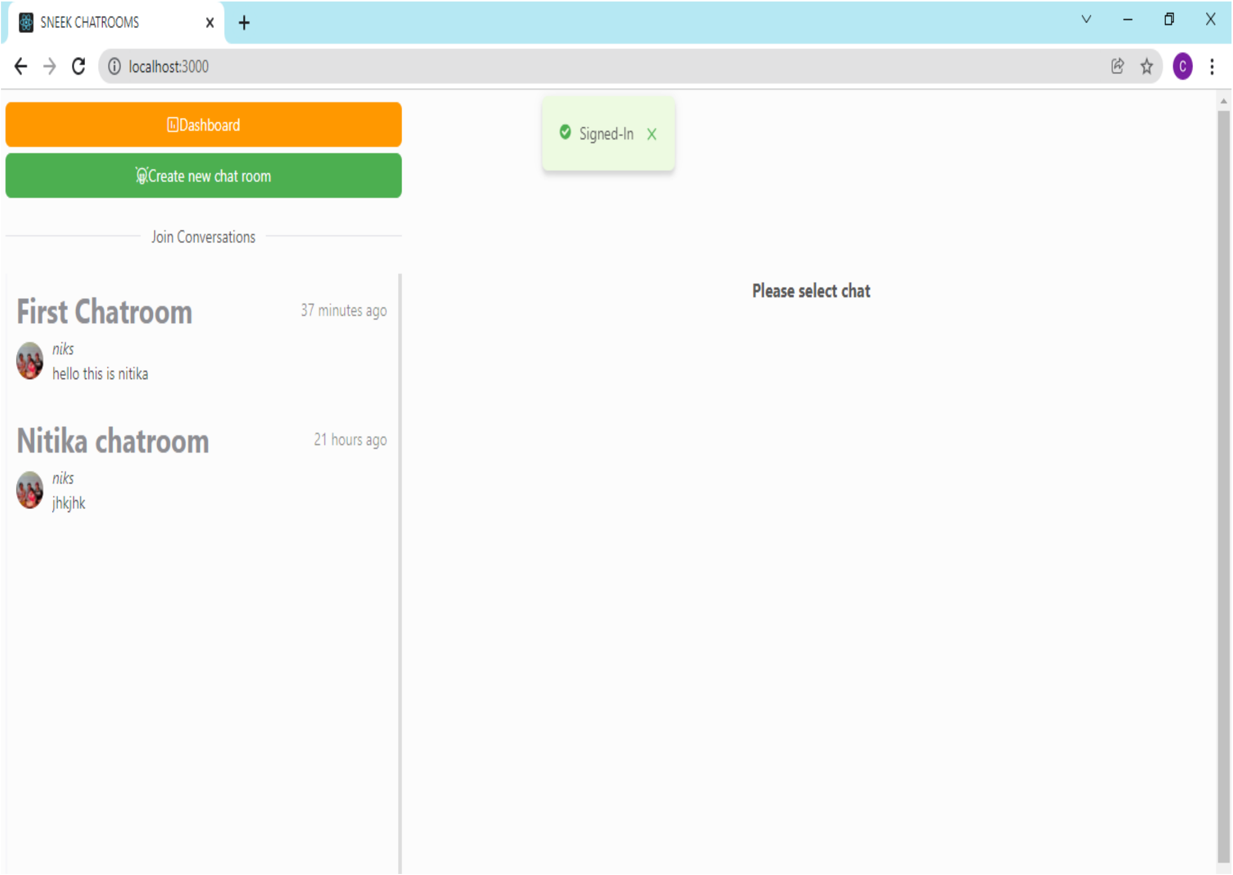


Choose an account

to continue to sneek-chatroom.firebaseapp.com

Code X
xc7628396@gmail.com

To continue, Google will share your name, email address, language preference and profile picture with sneek-chatroom.firebaseapp.com.



Join Conversations

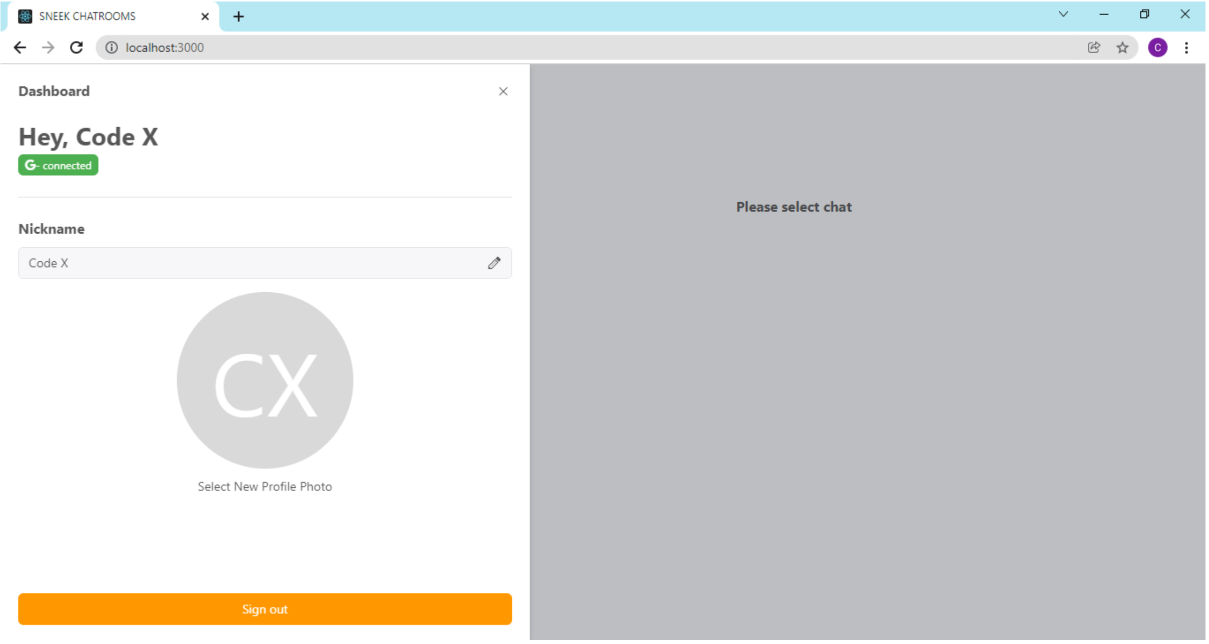
First Chatroom 37 minutes ago
niks
hello this is nitika

Nitika chatroom 21 hours ago
niks
jhkjhk

Please select chat

2. DASHBOARD (EDIT YOUR PROFILE)

- Edit your profile name and photo.



Dashboard

Hey, Code X

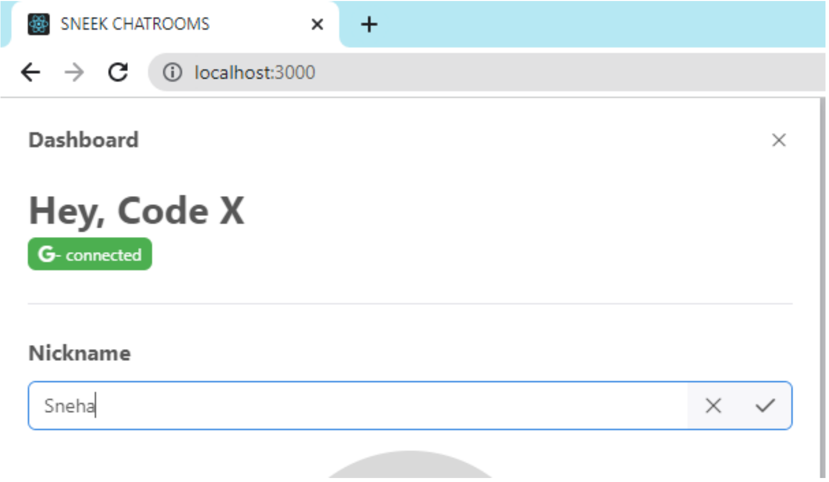
Nickname

Code X

Select New Profile Photo

Please select chat

- Edit name / Add new username (nickname)



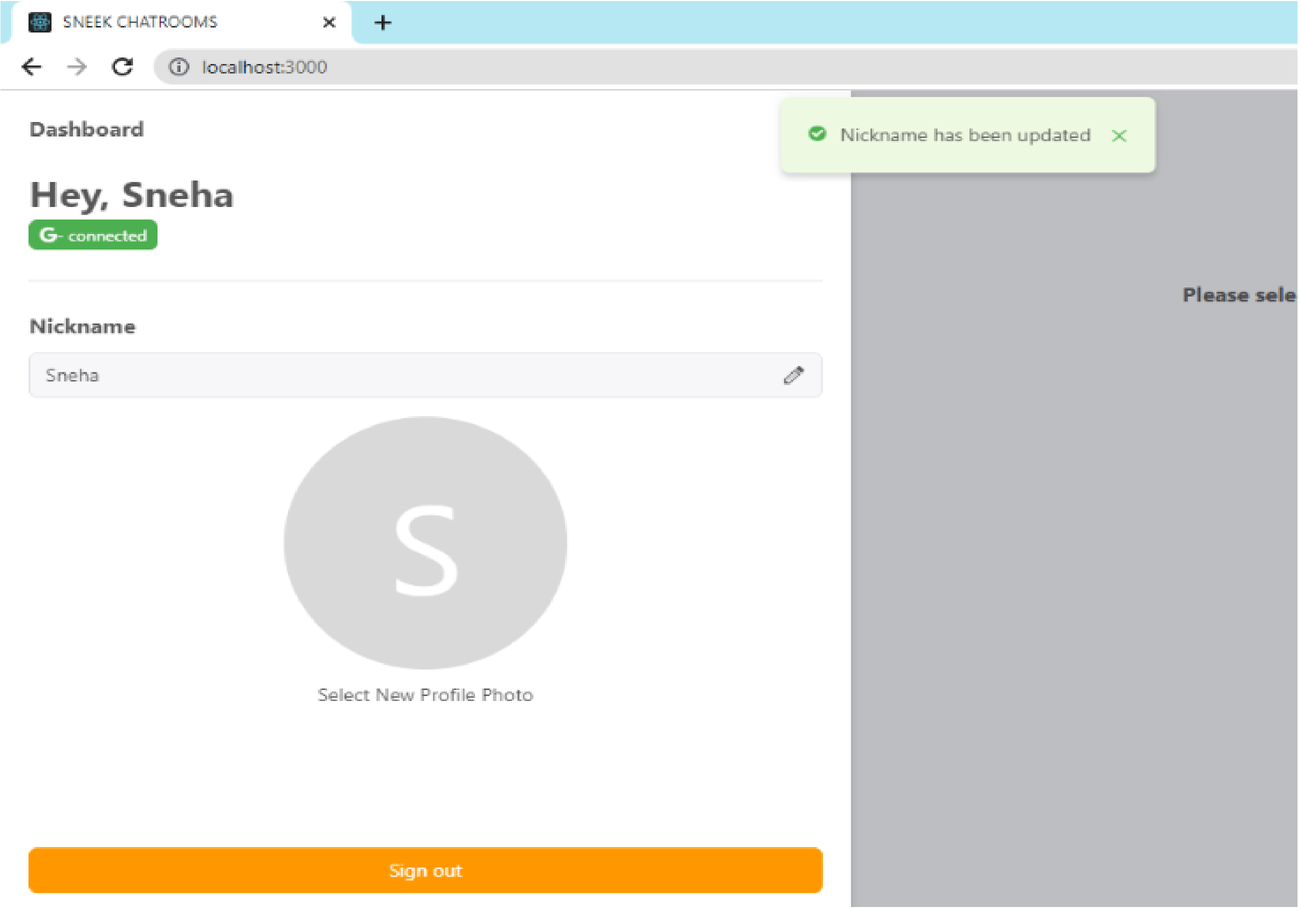
Dashboard

Hey, Code X

Nickname

Sneha

- <u>Name Updated</u>



Nickname has been updated

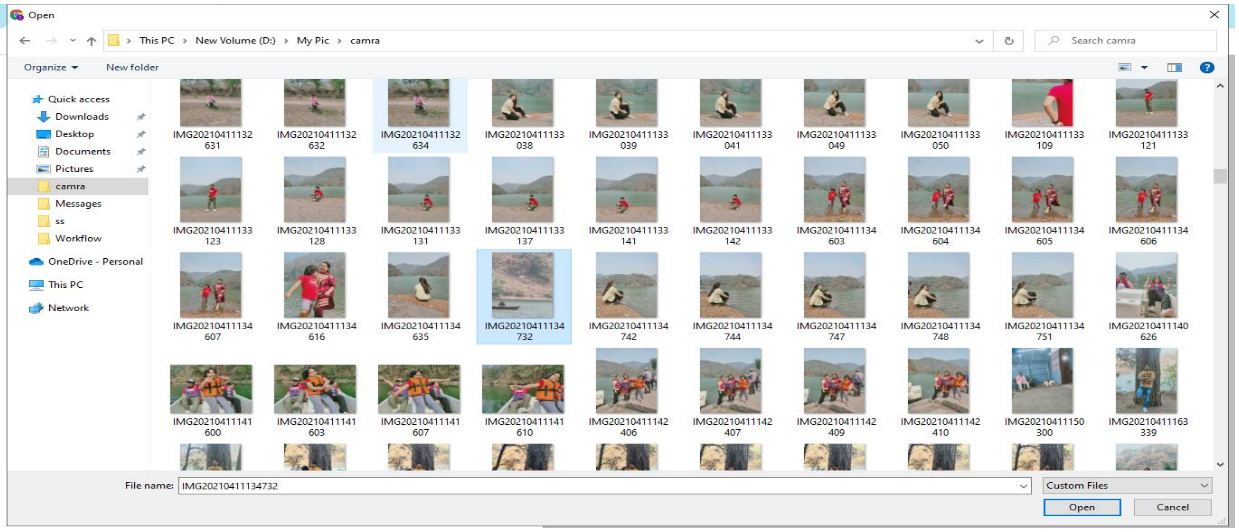
Dashboard

Hey, Sneha

Please sele

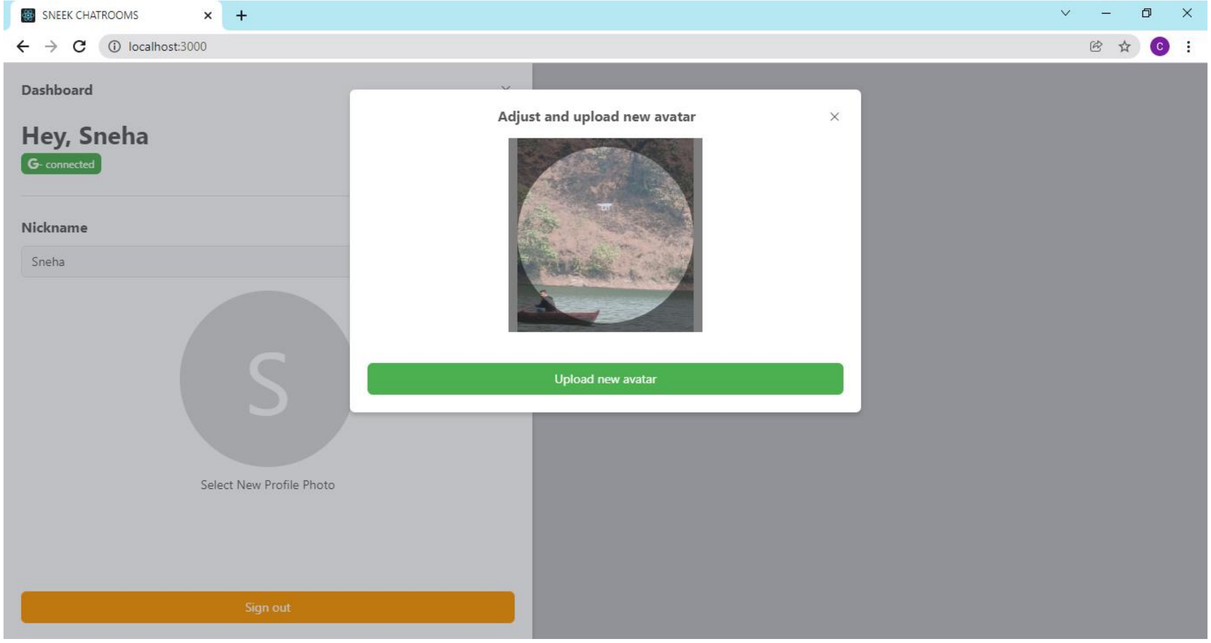
Nickname: Sneha

- <u>Select Pictures For Avatar / Profile.</u>

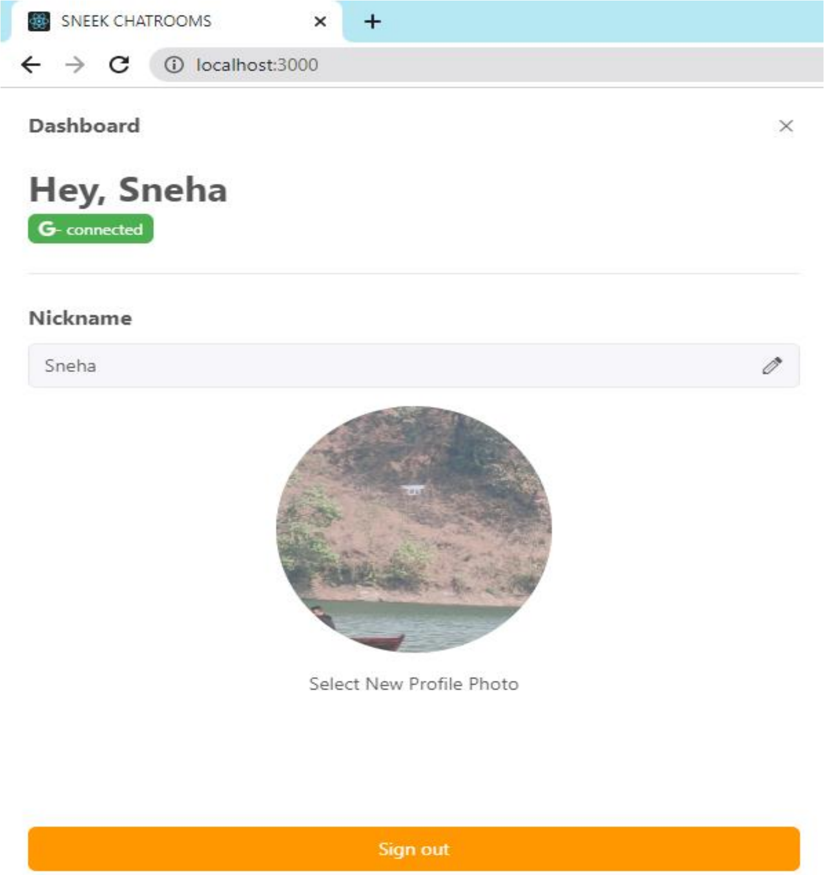


File name: IMG20210411134732

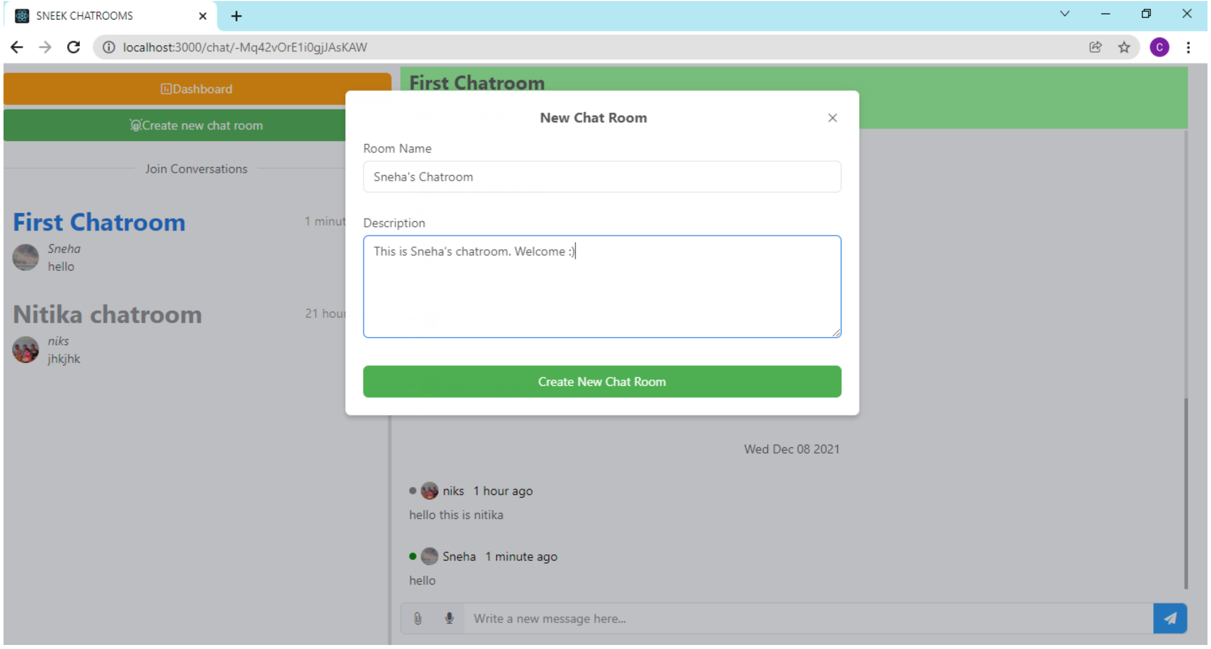
Custom Files



- <u>New Username and profile photo.</u>



3. Create Chat Room



Room Name: Sneha's Chatroom

Description: This is Sneha's chatroom. Welcome :)

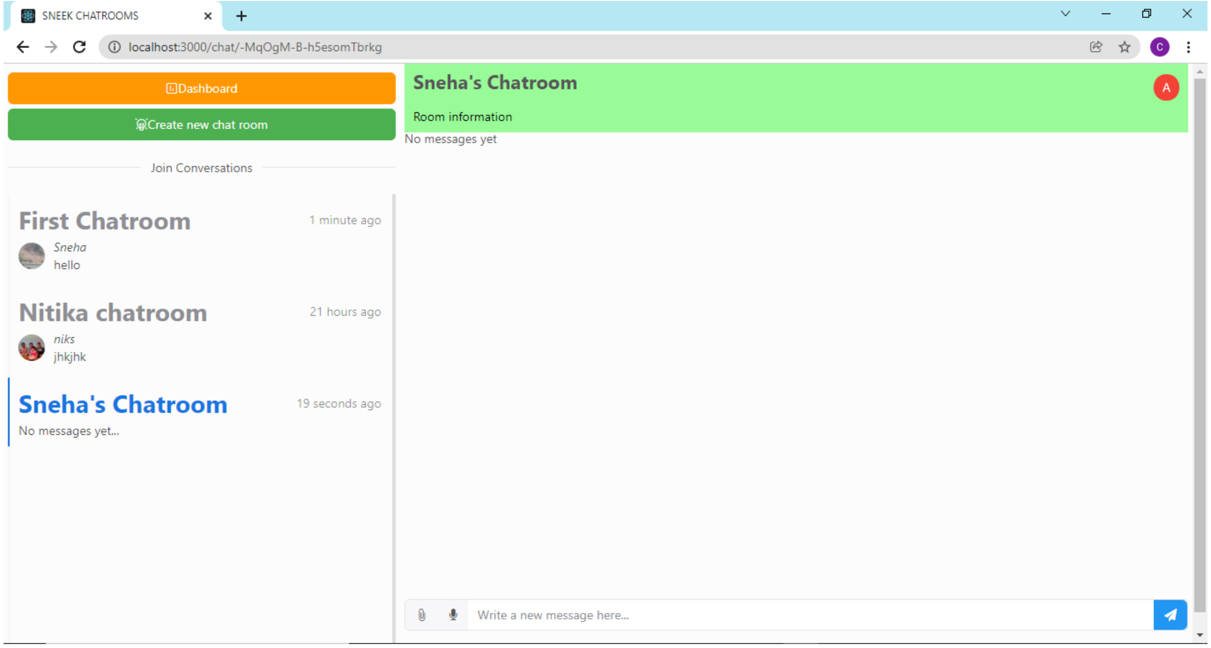
Sneha
hello

niks
jhkjhk

Wed Dec 08 2021

niks 1 hour ago
hello this is nitika

Sneha 1 minute ago
hello



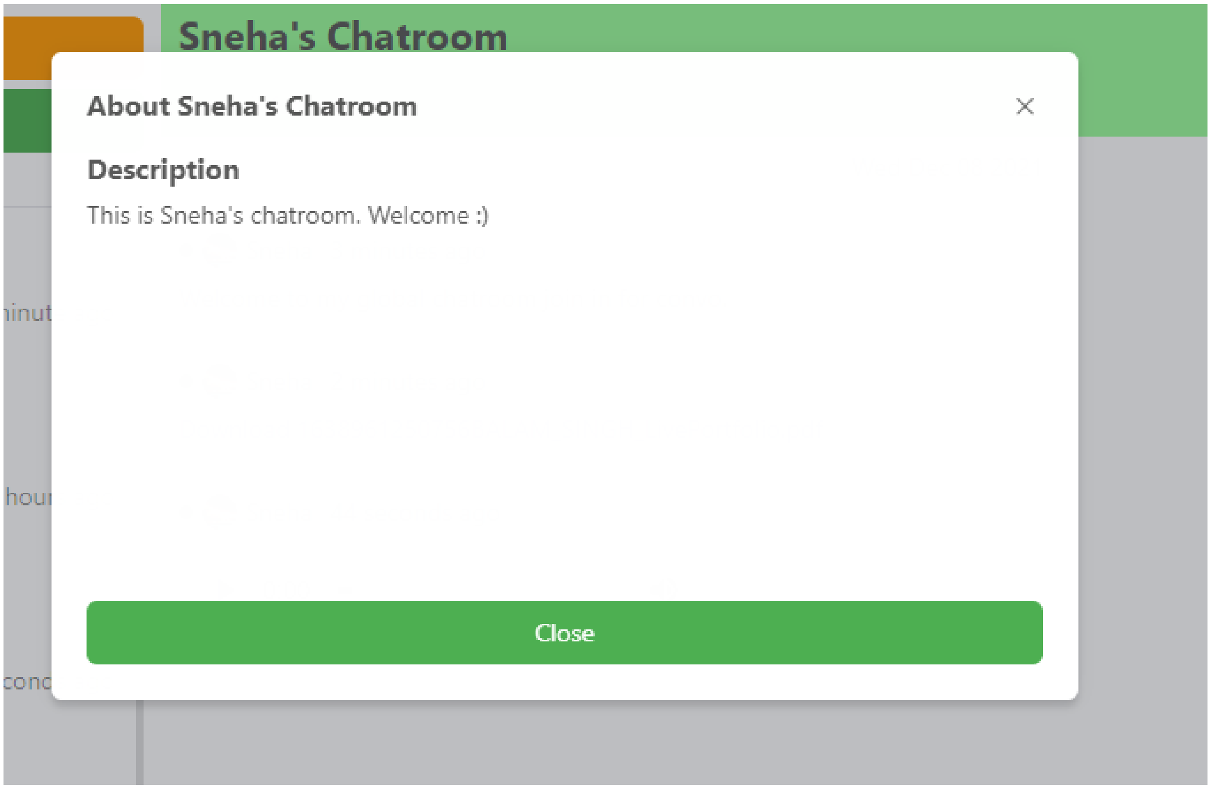
Sneha
hello

niks
jhkjhk

No messages yet...

No messages yet

- Chat room Information View
  Click on room information to view chat room information



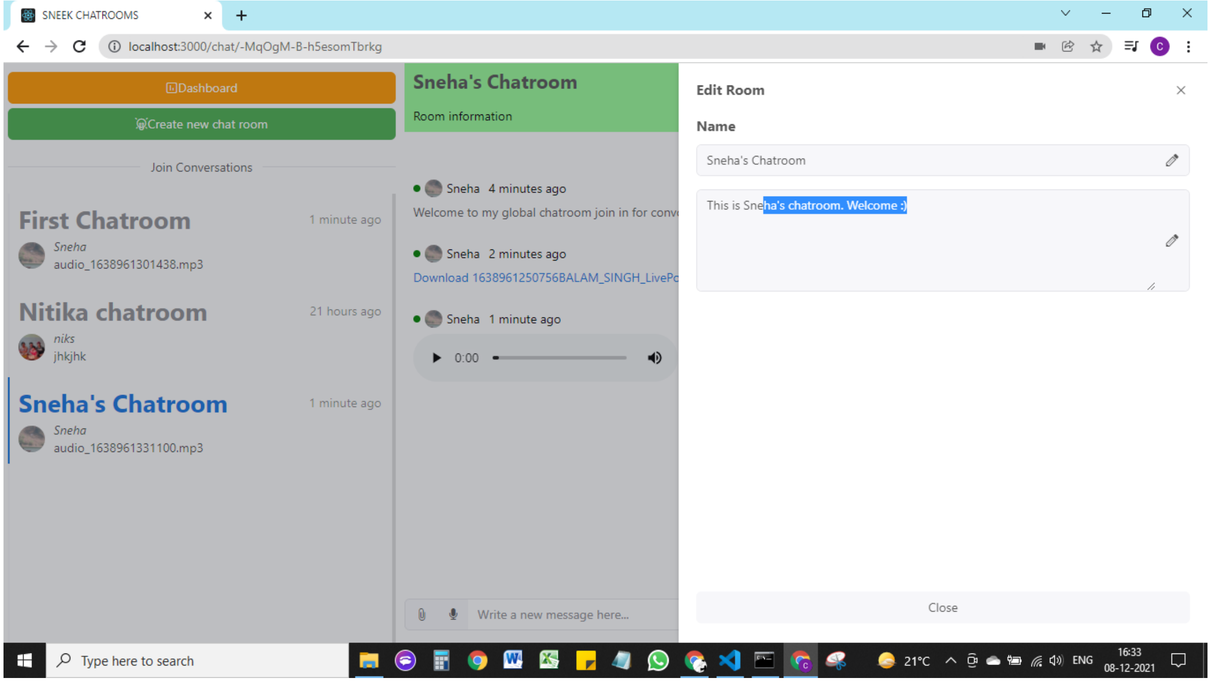
About Sneha's Chatroom

Description

This is Sneha's chatroom. Welcome :)

4. ADMIN ACCESS

- Admin Button To Edit Room Information And Room Name



SNEEK CHATROOMS

localhost:3000/chat/-MqOgM-B-h5esomTbrkg

First Chatroom 1 minute ago
Sneha
audio_1638961301438.mp3

Nitika chatroom 21 hours ago
niks
jhkjhk

Sneha's Chatroom 1 minute ago
Sneha
audio_1638961331100.mp3

Sneha's Chatroom
Room information

Sneha 4 minutes ago
Welcome to my global chatroom join in for conv

Sneha 2 minutes ago
Download 1638961250756BALAM_SINGH_LivePc

Sneha 1 minute ago
0:00

Write a new message here...

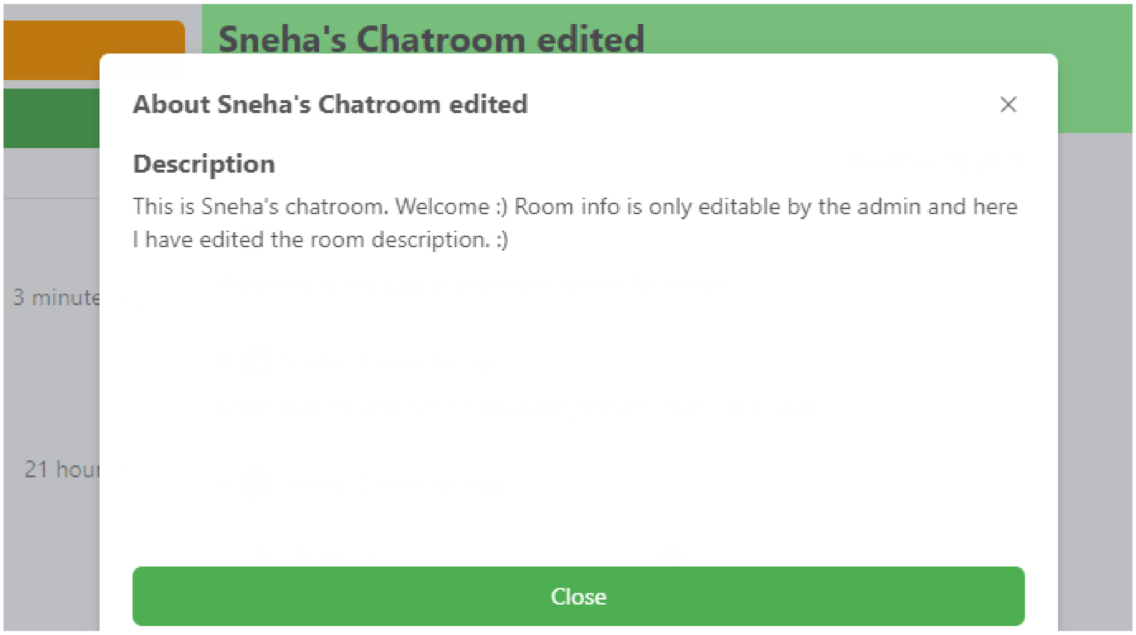
Edit Room

Name

Sneha's Chatroom

This is Sneha's chatroom. Welcome :)

- Update Room Information : Only group admin can change room information



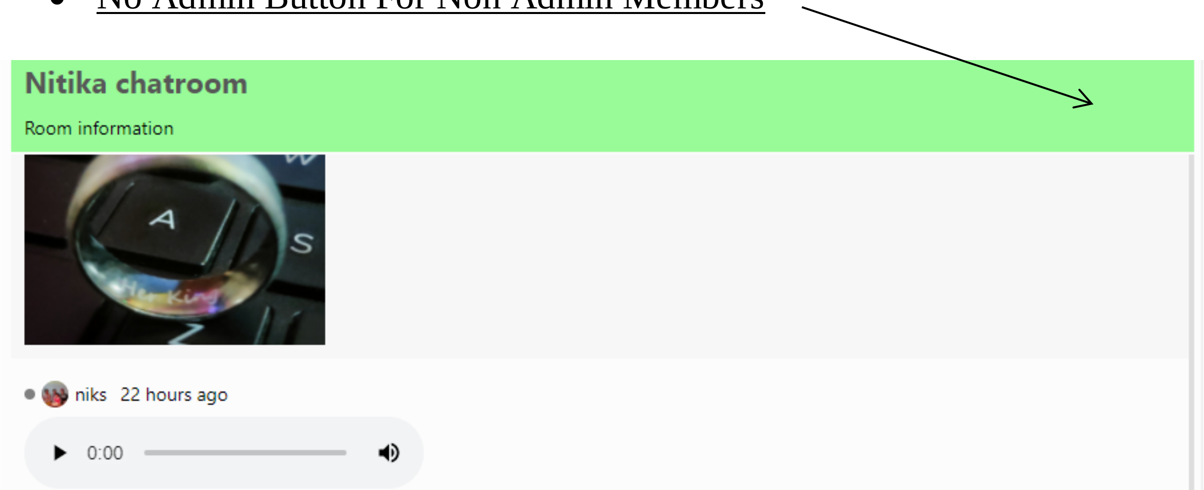
Sneha's Chatroom edited

About Sneha's Chatroom edited

Description

This is Sneha's chatroom. Welcome :) Room info is only editable by the admin and here I have edited the room description. :)

- <u>No Admin Button For Non Admin Members</u>



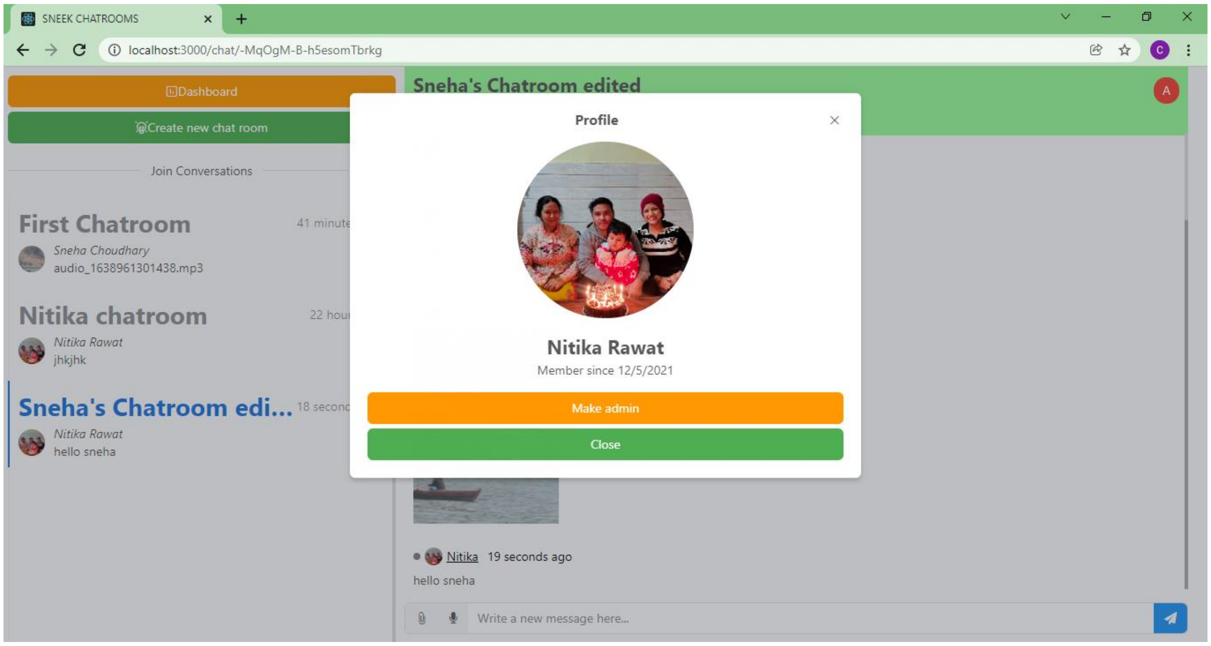
Nitika chatroom

Room information

niks 22 hours ago

0:00

- <u>Make Member Admin</u>



SNEEK CHATROOMS

localhost:3000/chat/-MqOgM-B-h5esomTbrkg

Dashboard

Create new chat room

Join Conversations

First Chatroom 41 minute

Sneha Choudhary

audio_1638961301438.mp3

Nitika chatroom 22 hou

Nitika Rawat

jhkjhk

Sneha's Chatroom edi... 18 second

Nitika Rawat

hello sneha

Sneha's Chatroom edited

Profile

Nitika Rawat

Member since 12/5/2021

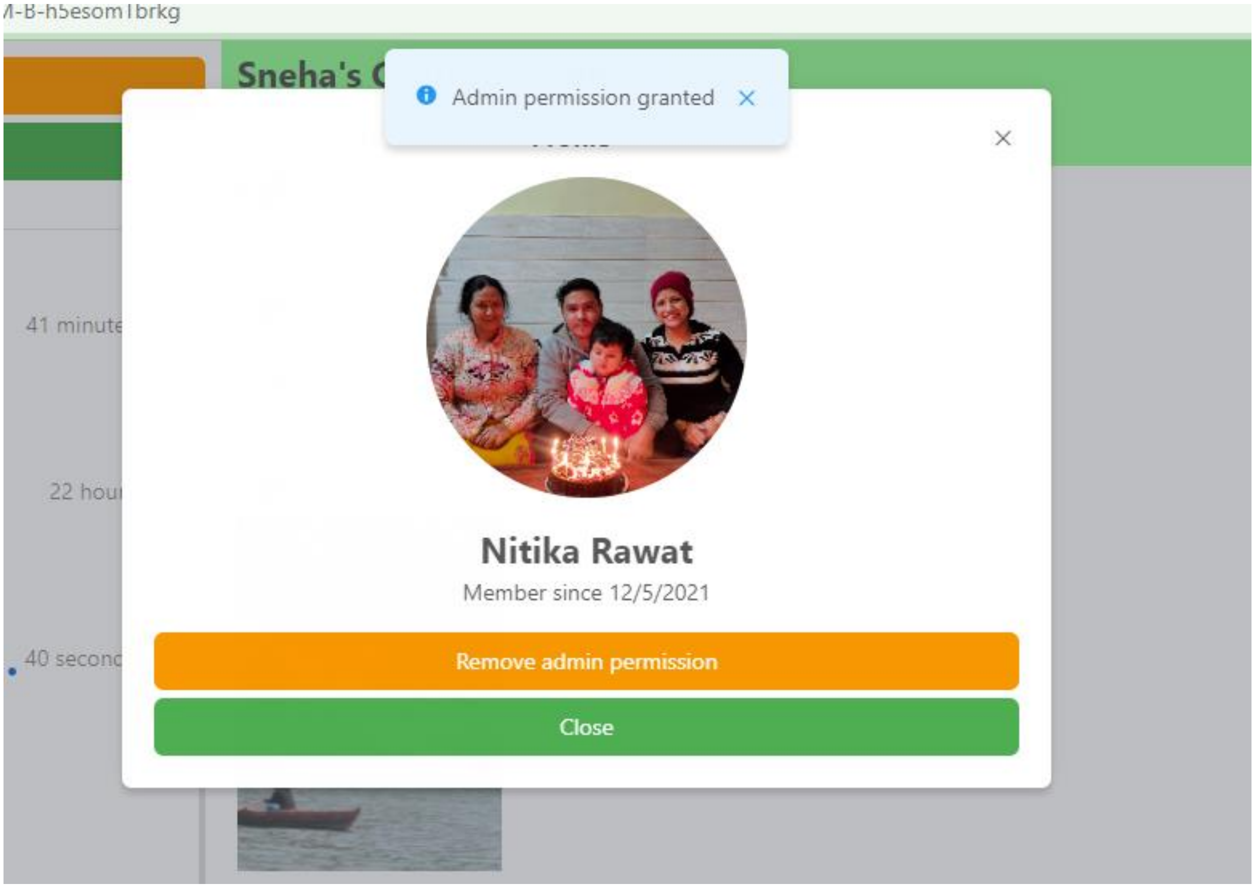
Make admin

Close

Nitika 19 seconds ago

hello sneha

Write a new message here...

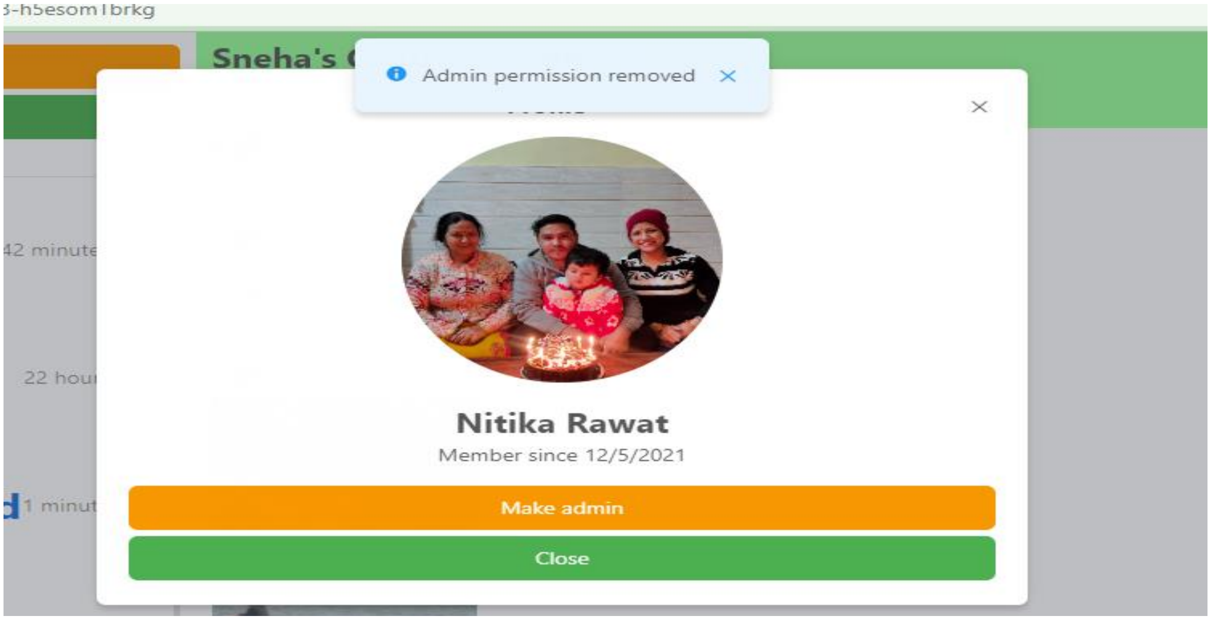


Admin permission granted

Nitika Rawat

Member since 12/5/2021

- <u>Admin Permission Removed</u>



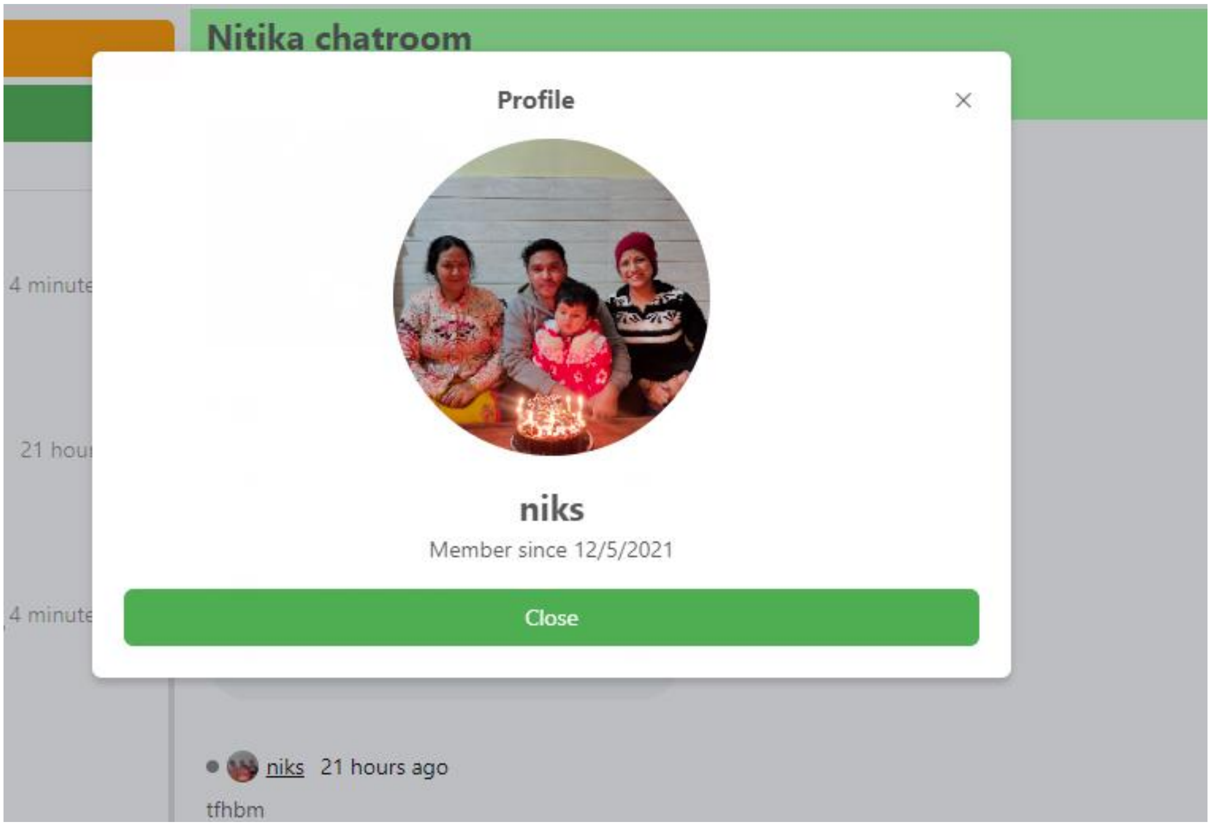
Admin permission removed

Nitika Rawat

Member since 12/5/2021

5. VIEW PROFILE

By Clicking On Name Of Person In Chat.



Profile

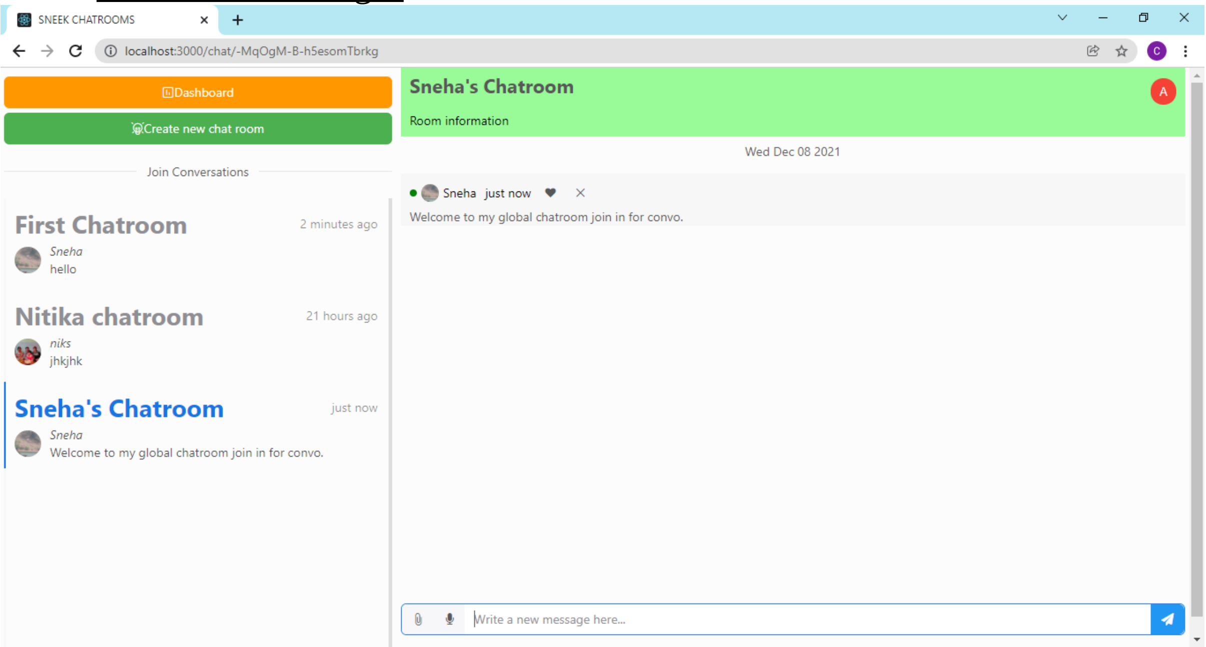
niks

Member since 12/5/2021

tfhbm

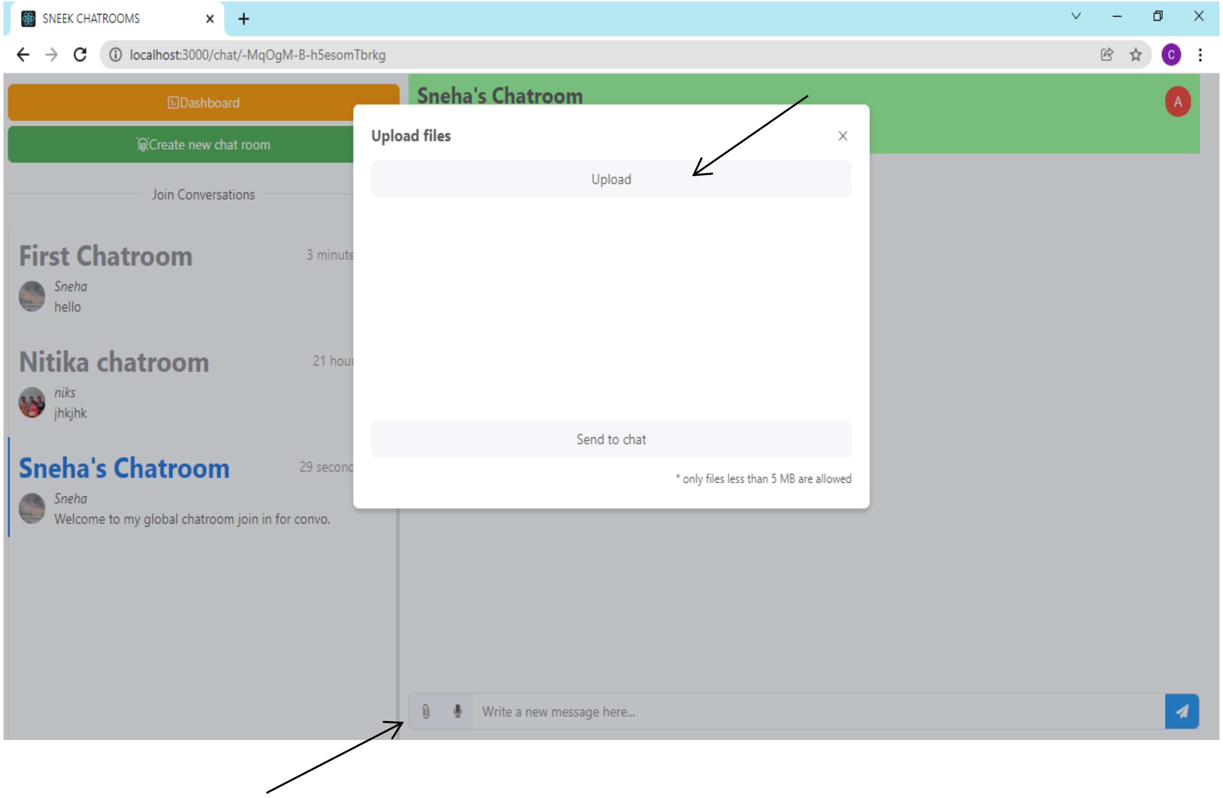
6. CHAT FEATURES

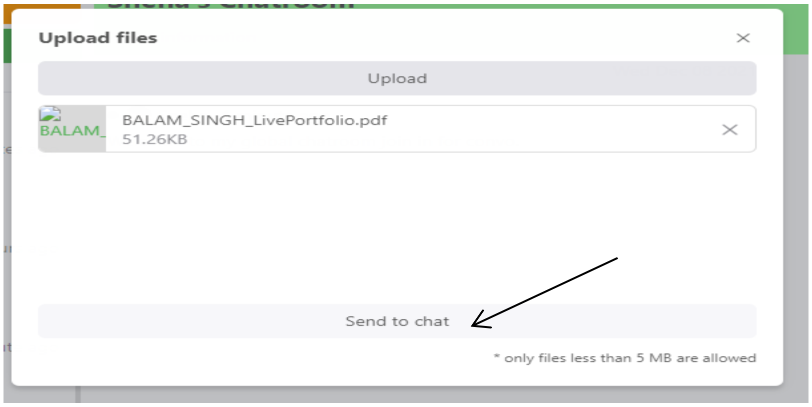
- Send Text Messages



Welcome to my global chatroom join in for convo.

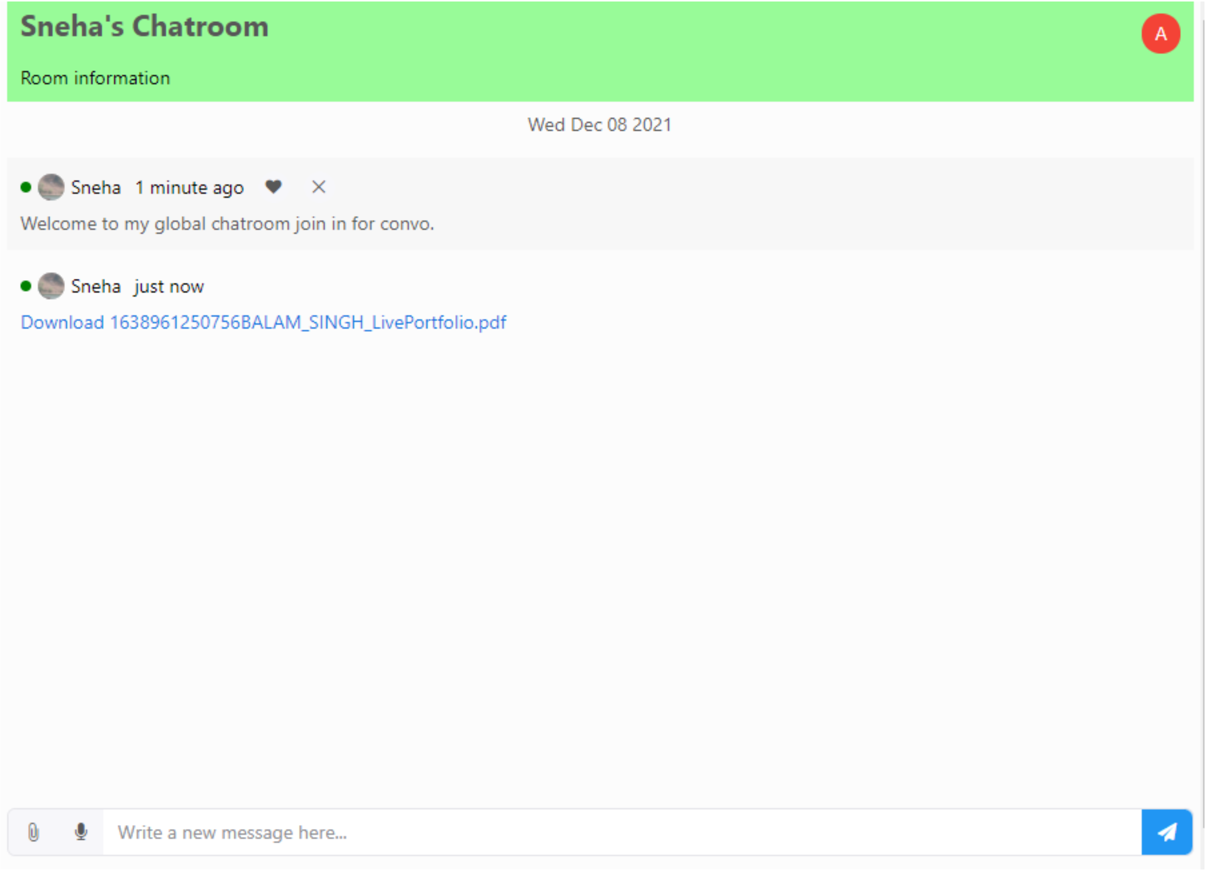
- Attach Files (documents, images, etc.)





BALAM_SINGH_LivePortfolio.pdf
51.26KB

* only files less than 5 MB are allowed



Wed Dec 08 2021

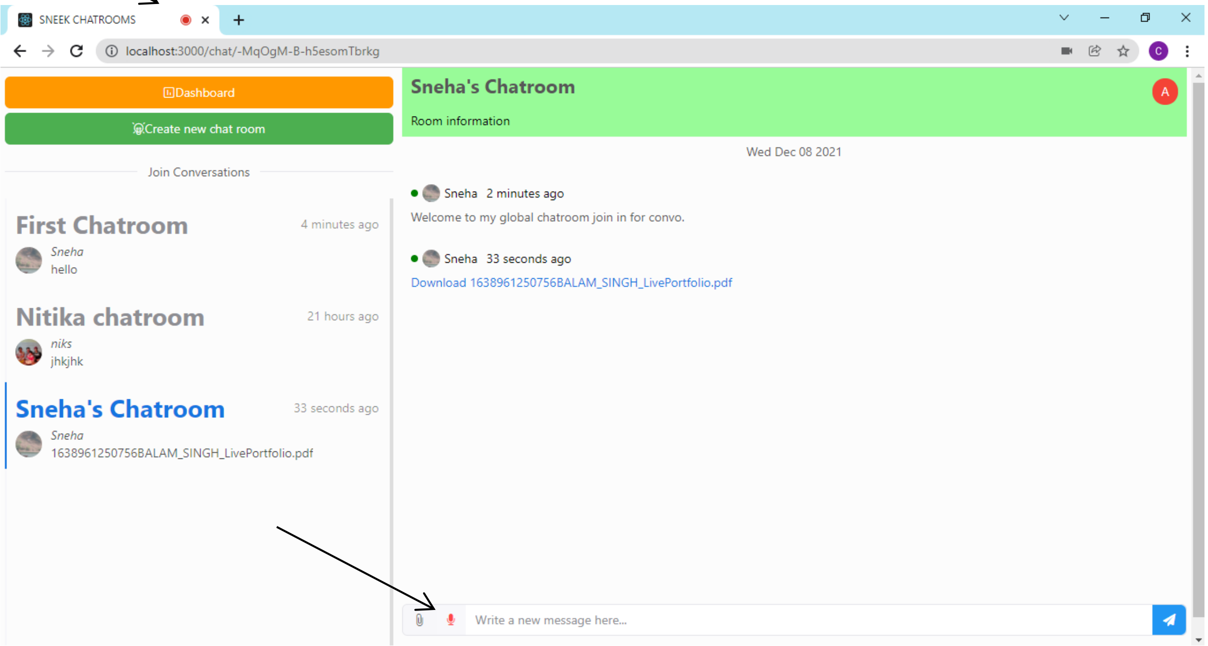
Sneha 1 minute ago

Welcome to my global chatroom join in for convo.

Sneha just now

Download 1638961250756BALAM_SINGH_LivePortfolio.pdf

- Record Voice Message



First Chatroom 4 minutes ago
Sneha
hello

Nitika chatroom 21 hours ago
niks
jhkjhk

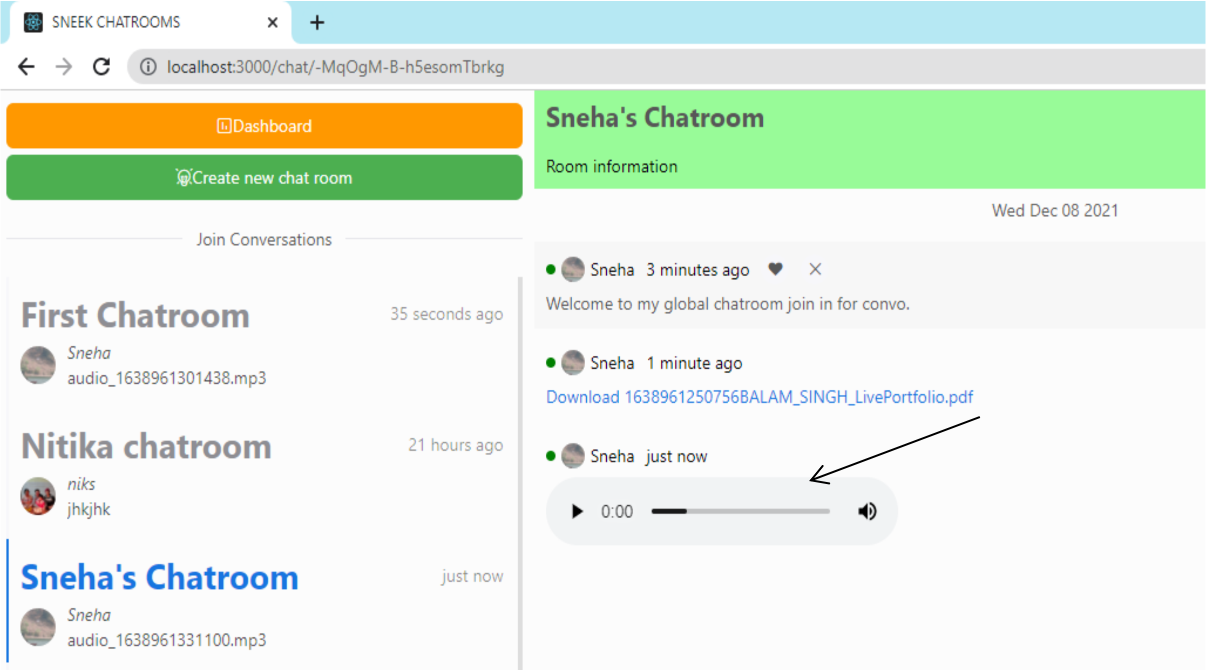
Sneha's Chatroom 33 seconds ago
Sneha
1638961250756BALAM_SINGH_LivePortfolio.pdf

Sneha's Chatroom

Wed Dec 08 2021

Sneha 2 minutes ago
Welcome to my global chatroom join in for convo.

Sneha 33 seconds ago
Download 1638961250756BALAM_SINGH_LivePortfolio.pdf



First Chatroom 35 seconds ago
Sneha
audio_1638961301438.mp3

Nitika chatroom 21 hours ago
niks
jhkjhk

Sneha's Chatroom just now
Sneha
audio_1638961331100.mp3

Sneha's Chatroom

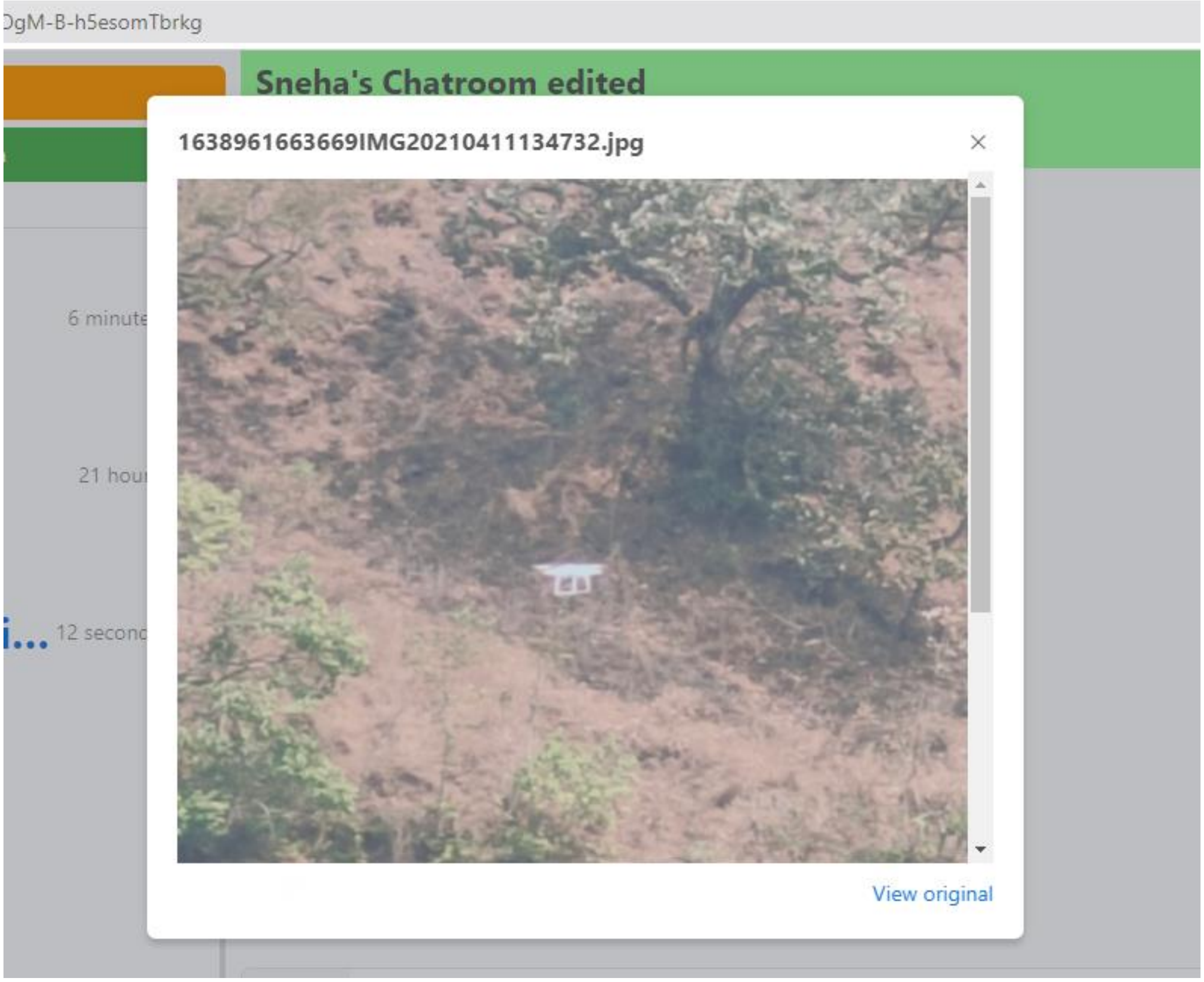
Wed Dec 08 2021

Sneha 3 minutes ago
Welcome to my global chatroom join in for convo.

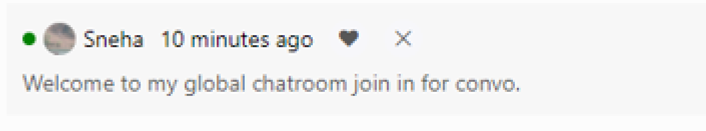
Sneha 1 minute ago
Download 1638961250756BALAM_SINGH_LivePortfolio.pdf

Sneha just now

- View Image Tab (on image click)

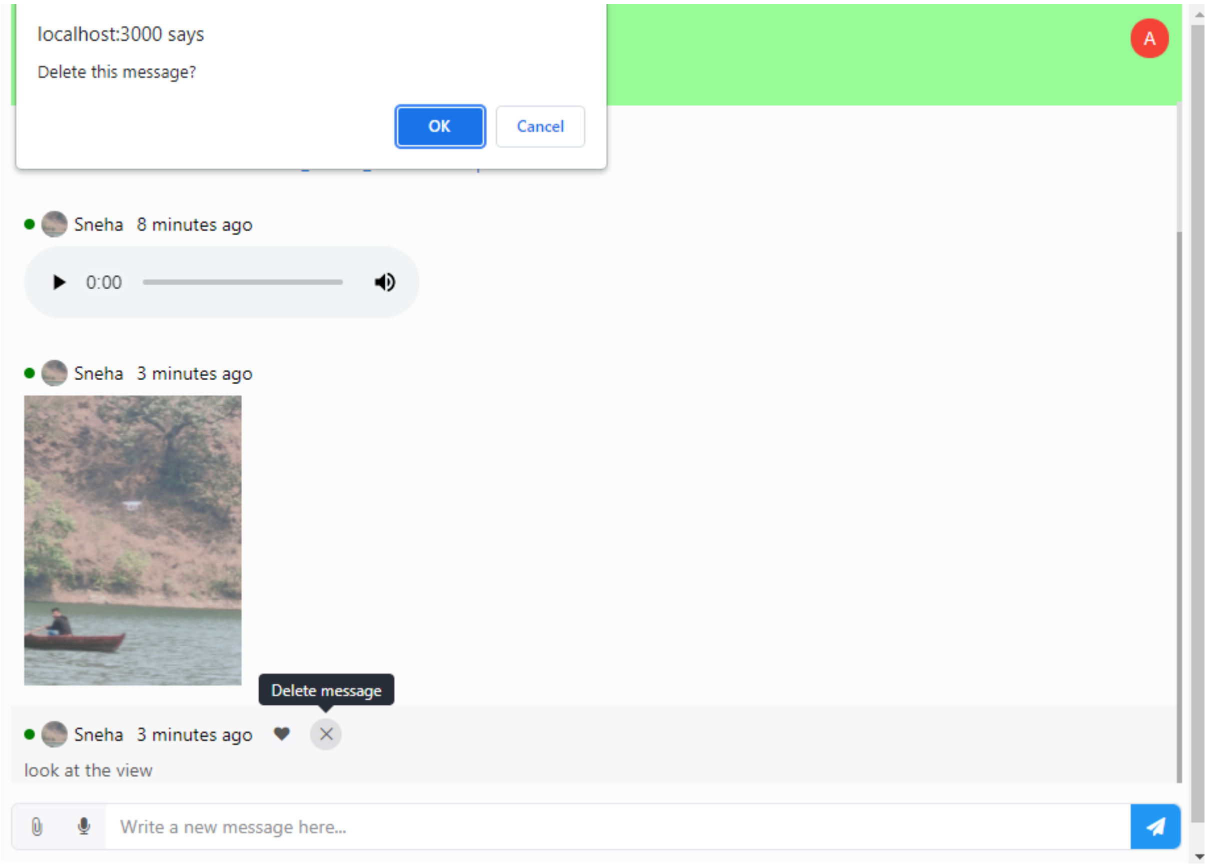


- Delete or Like Messages


Sneha 10 minutes ago ♥ ×

Welcome to my global chatroom join in for convo.

- Delete Message


localhost:3000 says

Delete this message?

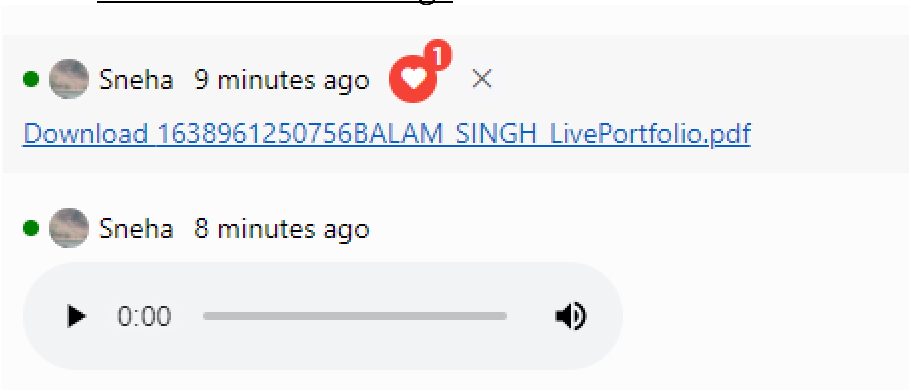
Sneha 8 minutes ago

Sneha 3 minutes ago

Sneha 3 minutes ago

look at the view

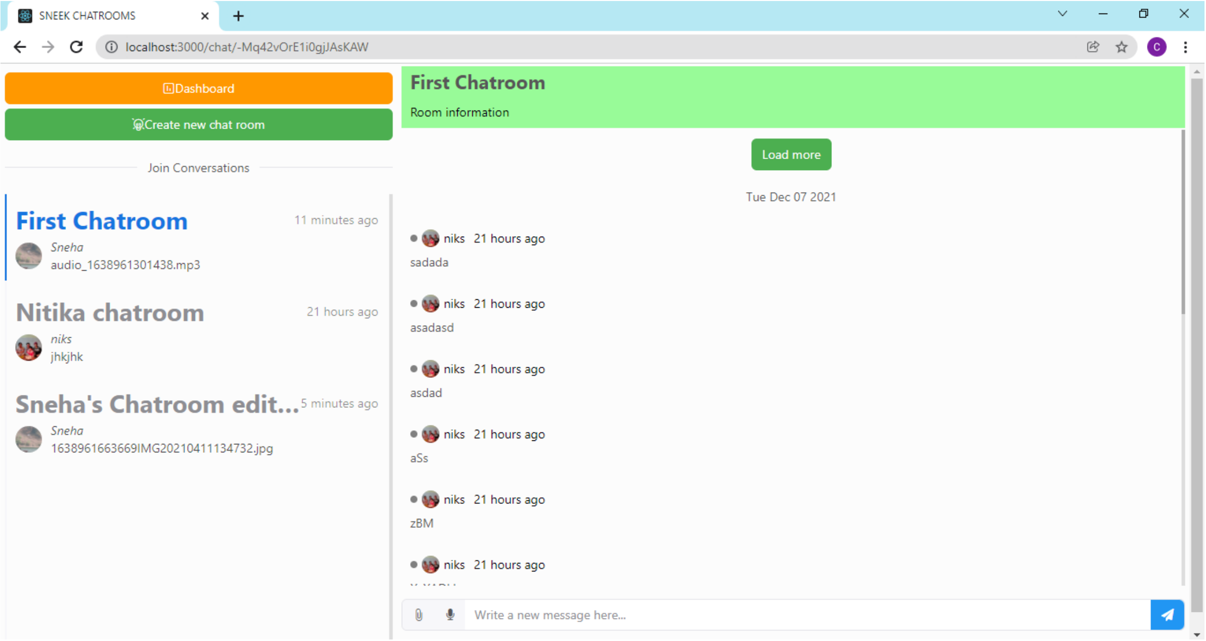
- Like Count on Message


Sneha 9 minutes ago

Download 1638961250756BALAM_SINGH_LivePortfolio.pdf

Sneha 8 minutes ago

- <u>Load Older Messages (on load more click)</u>



First Chatroom 11 minutes ago
Sneha
audio_1638961301438.mp3

Nitika chatroom 21 hours ago
niks
jhkjhk

Sneha's Chatroom edit... 5 minutes ago
Sneha
1638961663669IMG20210411134732.jpg

First Chatroom

Room information

Tue Dec 07 2021

niks 21 hours ago
sadada

niks 21 hours ago
asadasd

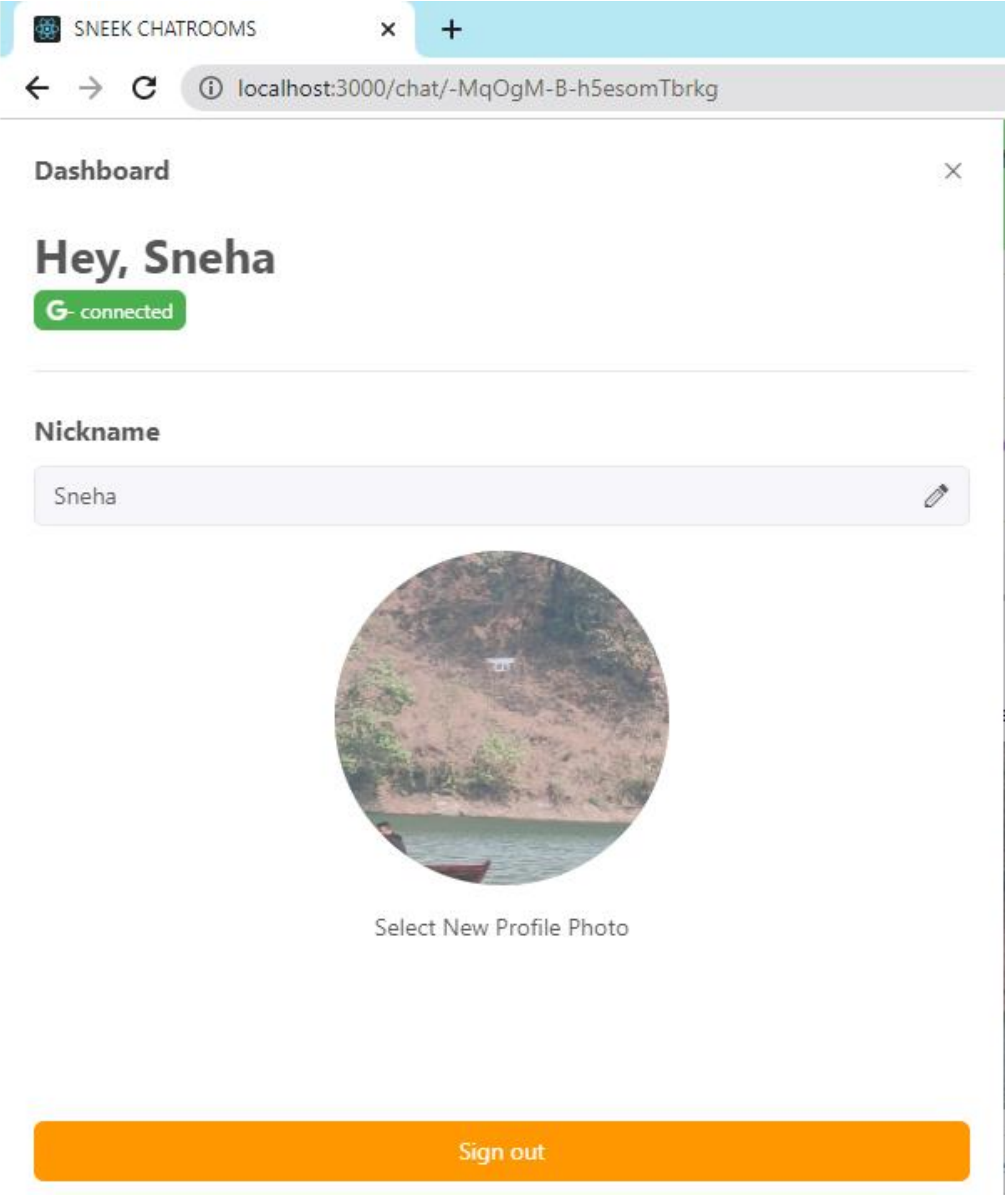
niks 21 hours ago
asdad

niks 21 hours ago
aSs

niks 21 hours ago
zBM

niks 21 hours ago

7. SINGOUT



SNEEK CHATROOMS

localhost:3000/chat/-MqOgM-B-h5esomTbrkg

Dashboard

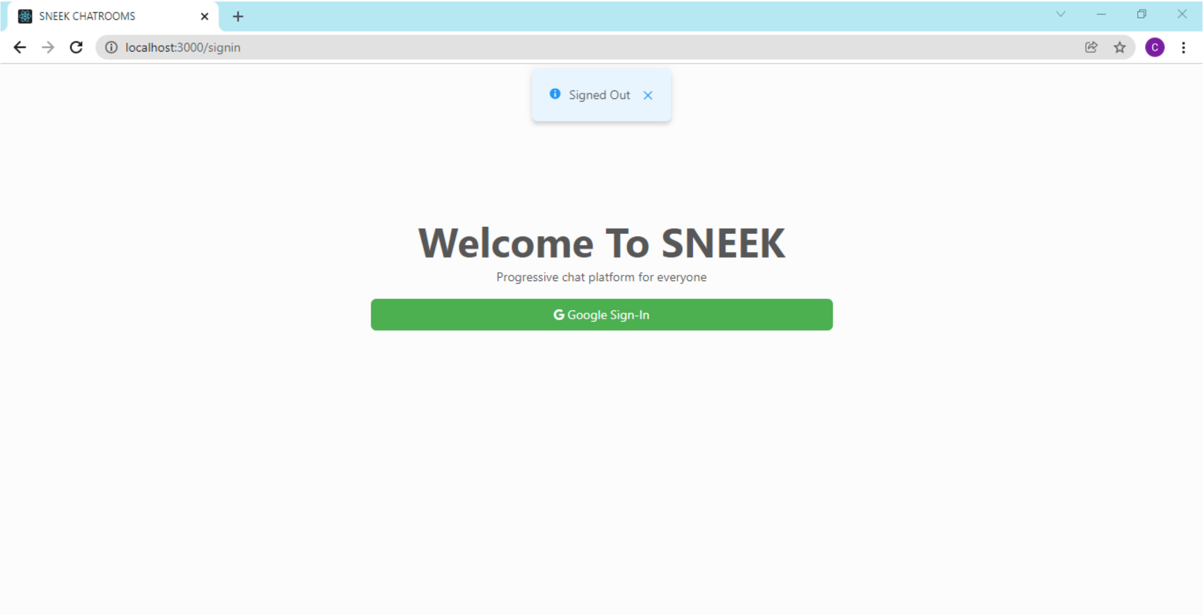
Hey, Sneha

connected

Nickname

Sneha

Select New Profile Photo



Signed Out

Welcome To SNEEK

Progressive chat platform for everyone

BIBLIOGRAPHY

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- www.youtube.com
- https://trainings.internshala.com/
- https://firebase.google.com/
- https://v4.rsuitejs.com/
- www.github.com
- https://reactjs.org/tutorial/tutorial.html
- https://sass-lang.com/guide
- https://firebase.google.com/docs/database
- https://www.mongodb.com/nosql-explained/best-nosql-database