Group 1: Project Report

Application Name: Slimeshare

Group Members: Felix Ezama-Vaughan, Prit Patel, Navroop Chahal, Joshua Ngo

Course Name: SENG 513: Web-based Systems

Course Instructor: Dr. Lorans Alabood

TA: Rahul Ravi

Introduction

Our application is called Slimeshare, as our application is built to take file sharing to a different point of view and usage. Our application is a web based system that allows its users to join rooms to send messages and send files to other users that they wish to share their files with. Our objective was to allow users to share files with other users that they choose to share their files with, making it as simple as possible. In addition, Slimeshare had additional ideas that would further introduce more functionalities to enhance our system.

Our main objective was to introduce a method for users on our platform to share files with one another. This would be done by file uploading to a room full of users, to which all users in the room can download this file if they so wish. This would include media files, image files, txt or related files that anyone can access as long they were granted access to the room that the file was sent in. Users will be required to input a “room id” in order to join the corresponding room. The room id will be visible to users in the room, and obtaining the id of the room would require contact with the users in that room.

An additional feature of our file sharing rooms include sending messages to other users in their current room. This is explained more in the background section of this report, but in short we wanted a way for users to communicate with one another on our platform as users shared their files. With potentially multiple users sending multiple files, it felt necessary to include a method of communication between our users to alleviate any complications.

Another feature we introduced was an account feature for users. This grants the user the ability to access a library, where they can view their previously downloaded files. This feature will be most utilized for users that wish to keep a history of their downloaded files in the case that they need to view their previously downloaded files for their needs. As said, this feature will only be available to users that sign up and register an account for Slimeshare.

Throughout this document, we will address different sections to show the development and experience of developing Slimeshare. The overview of the different sections are listed below:

- **Background**: Significance of Slimeshare and the inspiration behind the development.
- **Project Goals**: Our goals for Slimeshare during the planning process before development.
- **Project Accomplishments:** The capability of what Slimeshare can allow users to do.
- **Project Description:** How to use Slimeshare and the features it offers.
- **Mockups vs Project:** The comparison between early stages of development and the final product.
- **Project Requirements:** What Slimeshare has achieved and what needs to be improved.
- **Technology Used:** What types of technologies were used to create Slimeshare.
- **Future Work:** What we could have done to improve or change Slimeshare, if given more time.

- **Lessons Learned:** What the development team has learned from the experience of developing Slimeshare.
- **Conclusion:** Insights and comments on the project and Slimeshare.
- **References:** Sources that helped us during the development of Slimeshare.

Background:

Slimeshare was inspired by file sharing websites such as MEGA or Mediafire. Our ideas revolved around these programs and their main feature, which is file uploading and sharing. Our ideas were brought to this field of technology due to the increasing usage of the internet in present times. People around the world utilize the internet for numerous different uses, and some companies have even gone fully remote due to the power of the internet. In cases like these or similar to these where users wish to share something other than just text messages, file sharing is a must have in the world of the internet.

Our project will be useful for allowing users to accomplish exactly that; the ability to share their files with other users. Our application is the most useful when multiple users need to share multiple files with other users. These scenarios could appear in places such as schools where students need a platform to share files with one another with simple access, or even general usage for users that wish to send files to others.

Our motivation to finish this project was due to our interests in file sharing as well. Each of our group members have all used file sharing platforms at least once, and we were familiar with the upsides and downsides that were present while using them. One large downside noted by one of our team members was the cumbersome link sharing for sites like Mediafire. If a user wanted to share multiple different files, then a link was required for each file that redirected that user to a separate webpage for each file. Our motivation to develop Slimeshare involved in pointing out flaws and building our improvements on top of that for Slimeshare.

Project Goals:

Our main goal for this project was to offer users a way to share their files with multiple other users with ease. Slimeshare's motto is "File sharing made easy", which reflects this goal. We wanted users to have an easy way to share and download other files with other users. Our other goals were to also introduce other features that would make Slimeshare the main choice for users to use when they think "File sharing". This included ideas like accounts to save downloaded files, user friendly interfaces, attractive interfaces, easy access etc.

Other goals included more personal development goals, like successfully learning the technologies that were researched during the planning stage of development. Our development team were all fairly new to the technologies that were required in order to develop Slimeshare, and our personal goals included learning these technologies such that we would be able to implement them into other projects or be familiar with them for the future.

Project Accomplishments:

For the final release of Slimeshare, users will be given the ability to share their files with other users, and download other files that other users share with them. Of course, users will only be able to download and share files to users in the same room, which requires the corresponding room ID in order to join.

Users can create rooms at any time. The room name will be automatically generated and is solely for design and aesthetic purpose, and a randomly generated ID will be given to the user who has created the room. They can share this room id with the users that they wish to have a file sharing session with. These users will then input this ID when being prompted to join a room.

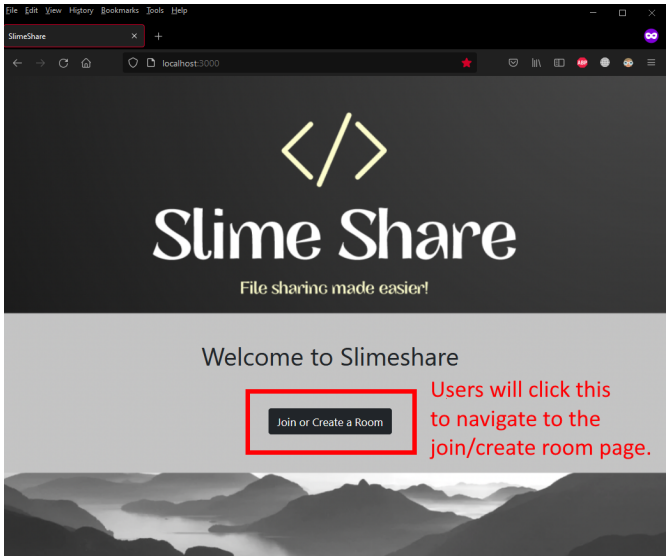
Once in a room, users will be able to chat with other users if they wish, or simply upload whatever file they wish. Once a file is uploaded by a user, it will be seen by all users in the room, to which a user can click on it to download the file.

Users will be able to see the history of all files that have been sent and downloaded by clicking the “View Files” button in the join room page.

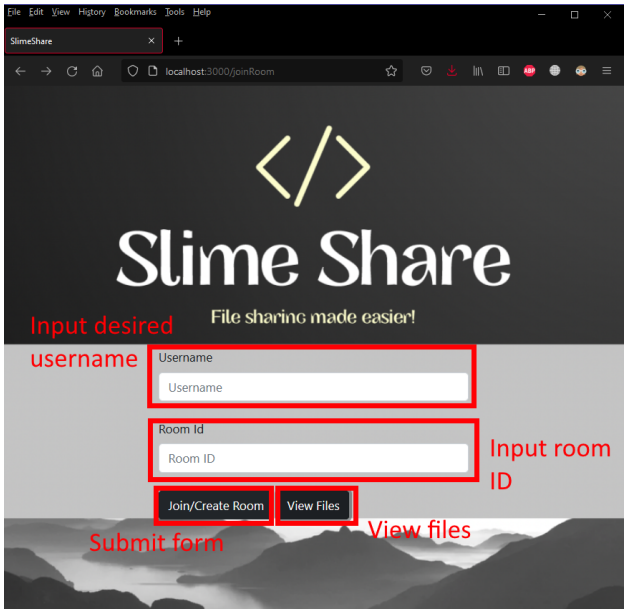
Project Description

Here, we talk about Slimeshare and how to use it.

Main Page: This page is the starting page for the users on Slimeshare. The “Join or Create a Room button will redirect them to the join or create a room page.

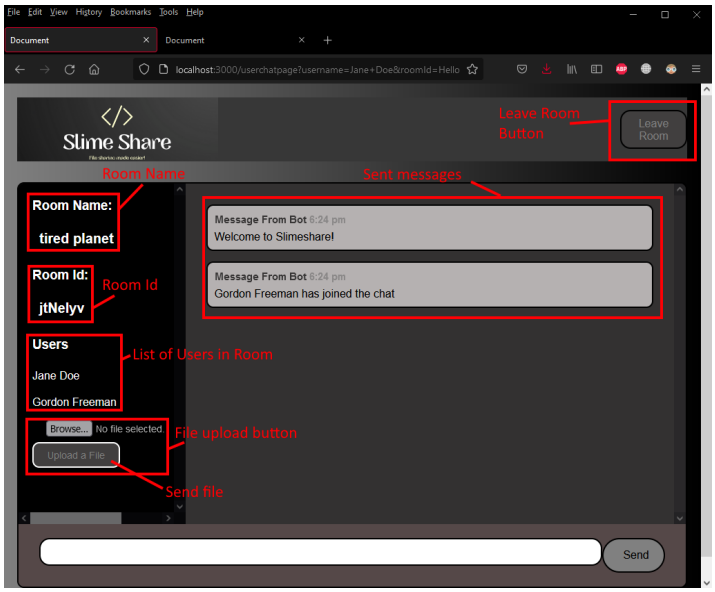


Join Room and Create Room Page: This page is the page for users to join a room. They simply input a room ID and the username they would like to display in the room, and they will be redirected to that room. If the room ID does not exist, the program will recognize this, and create a room for the user with a randomized ID and randomized Name.

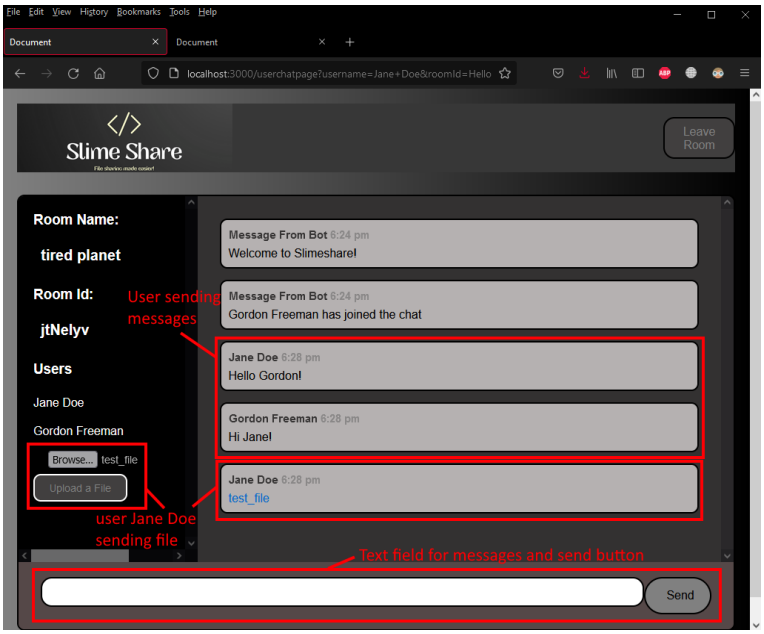


File Sharing Page: This page is the page where the file sharing and messaging takes place. On the left sidebar, it shows the users in the room, the room name, the room id, and a button that allows users to browse their device to upload a file. At the bottom, the user can use the input field to send a message if desired. Once a message or a file is shared, then it will appear in the chat history in the middle of the webpage. Clicking on a file in this section will download the file to the user's device.

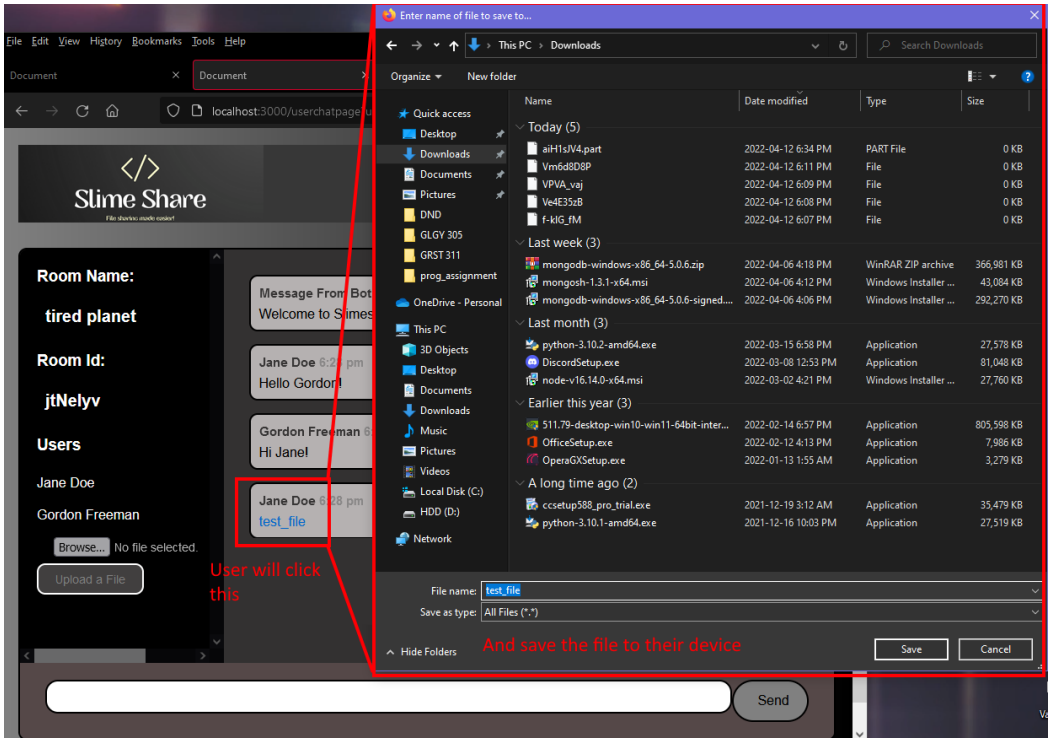
Users Joining room below

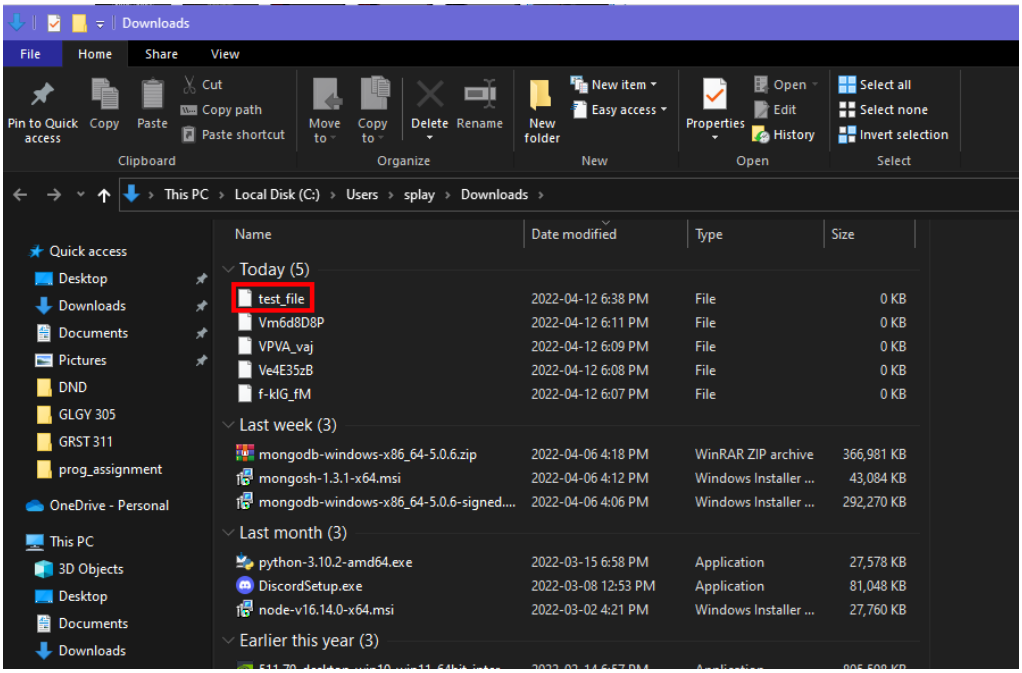


Users sending messages and uploading a file below

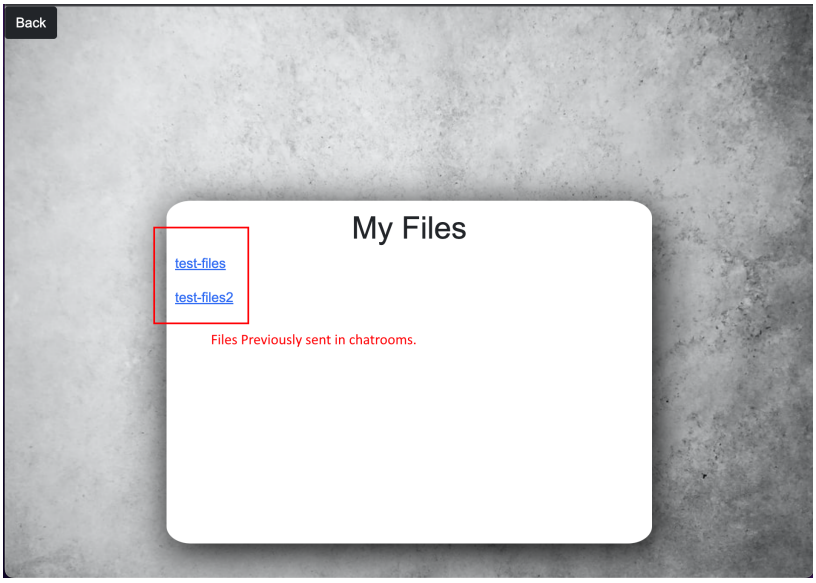


User Gordon Freeman downloading test_file from Jane Doe below





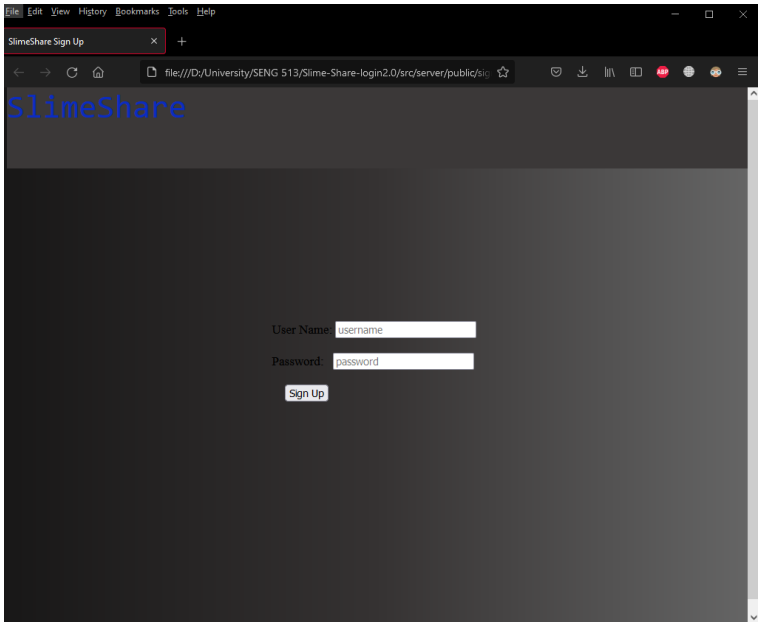
Files Page: This page is for registered users wishing to see their download file history. It simply displays the file names in chronological order of download date (Most recent to Less recent).



Mockups/Planning vs Final Project:

1. In the mockup and planning stage, we designed the same web application but with the ability for users to sign in. This was later removed though as we felt that the use of an account would not be very useful as users could perform most other functionalities without it. Additionally, proper user sign in would sometimes result in an unauthenticated response which made it unreliable. Seeing as how the risk was not worth the reward, the feature was removed.

Scrapped Signin Page below



2. Initially, users were supposed to be able to have the additional functionality of sending files to specific users as well as the group but only the group feature was implemented due to time and commitment constraints.

Project Requirements

Below is a table of requirements that we had planned for the finished product for Slimeshare, and what we have currently completed in the list of requirements.

Requirement Description	**Status?**
Users can interact with other users real time?	Complete - File sharing and messaging
Users can interact with chosen users in real time?	Complete - File sharing and messaging
Multiple user support?	Complete
Persistence?	Could be improved with account creation
Server side event handling?	Complete
Client side event handling?	Complete
Mobile Support	Mobile support is integrated, though could possibly be

	improved.
File upload functional?	Complete
File download functional?	Complete, to an extent. Could use work.

Technologies Used

To create Slideshare, we leveraged several different technologies to assist us during development. We will go through them below and explain the usage and how it helped..

Socket.Io: Socket.io was a must have for our platform, as our platform dealt with multiple users interacting with each other at the same time. This required us to utilize socket programming to achieve this. With socket.io, we were able to successfully handle clientside and serverside events that will be triggered throughout the usage of Slimeshare. This is a Javascript library that can be implemented by using node.js installer or through the internet.

MongoDB: Because we were potentially storing using data, this required us to implement a database of sorts to keep track of data. We did this using MongoDB, which allowed us to connect our backend data handling and specifically helped us store account data such as login name and password, as well as each user's downloaded files. Access to this technology can be found on MongoDB's website for download and install.

Express: To navigate around the webpages and to handle routing, we used express which allowed us to easily set up endpoints that could be used to transfer information, redirect users, and everything in between. This is a Javascript library that can be implemented by using node.js installer or through the internet.

Github: While developing our solution, we used github as a means for version control and collaboration. This allowed us to develop separately without too much concern over stepping on each others' toes as we worked on separate branches. This also allowed us to revert changes that had unforeseen consequences or undefined behaviors. Github is website, although there are ways to access Github through a remote machine using bash or terminal.

Heroku: Before transitioning to Github, we tried Heroku as it also came with a way to deploy the solution once it was finished. We decided to transition midway through the project however as more team members had proficiency in Github.

Future Work

Should time permit in the future, the group hopes to be able to implement these additional features:

- **File sharing with specific users:** At the moment, Slimeshare only allows file sharing within all users in a room. If a user wanted to share a file with only one specific user in that room, it would require them to create a whole new room, which feels a bit impractical. Thus, in the future, we would look to implement a way for a user to send a private message and private file for certain members in the entire session room.
- **User accounts to allow for remote file storing:** This would involve allowing our database to keep track of user accounts, and the files that they have access to remotely. This would incentivize users to continue to use Slimeshare not just for sharing files, but also organizing and keeping files that they wish share on the platform.
- **Allow for large file transmissions over the network:** This was our original idea for Slimeshare, and throughout the development of Slimeshare we have ran into problems regarding large files being sent to the rooms. It would cause a variety of problems which proved to be a cumbersome obstacle. In the end, large files are not supported in this release of Slimeshare, however it is most definitely something we would like to implement in the future, had we the time to develop it.
- **Quickshare:** If a user would like to simply send a file quickly, it may not be very efficient or worth their time to create a room and go through all that trouble for one file. If we had the opportunity, we would implement a way for a user to quickly upload a file to the platform and share the weblink or something similar to another user or two. This would most likely be faster and more efficient than a user creating a room and then telling the others to enter Slimeshare to join a room.

Lessons/Skills Learned

As a group we feel as though we've learned better how to

- **Communicate**: It was good practice to learn how to conduct consistent group meetings to allow us to stay on the same understanding for where the project is. A group chat offered us easy access to communicate among ourselves,
- **Meet deadlines/planning**: Deadlines are always tough, but careful planning and time management was our key to meeting our deadlines on time. As a group, we were able to meet deadlines on time, without any rushing and making sure to practice careful preparation before submission.
- **Research the solution to complex problems:** There were ultimately many problems and roadblocks encountered during the development process, and our group learned how to tackle different problems and solve them. This involved improve our debugging skills and viewing code as a team to pick out potential mistakes and improvements to the code.

- **Work more efficiently and effectively on teams:** This included dividing work properly and understanding who was stronger in certain areas, assigning work that would make the development process smooth and efficient. Throughout this project, we have further developed our team building and teamwork skills.

With these, a few hard skills have also been learned:

- **Frontend development with HTML, CSS and JavaScript:** This includes learning how to properly find and implement useful libraries for development. Another skill we learned to handle is making the web pages responsive for any device.
- **Backend development and the Nodejs runtime:** This included back end handling for certain events, like connecting data in the back with the DOM to display proper data.
- **Database configuration and administration:** MongoDB was our provider for a database system, which allowed us to handle files. Learning how to use it was a great experience as it will most likely serve to be relevant in future work.

Conclusion

Overall, the project was a fun one to work on and presented us with a lot of learning opportunities. For all of us, it was all our first time working to develop a web application. In addition to that, a lot of us were new to Javascript, and we found that the programming between the front end HTML/CSS and the back end javascript really taught us how to properly create applications with proper event handling and response.

The course was also interesting to learn, it was definitely more hands on learning instead of the general theory work. It presented interesting and unique challenges which are applicable to the work force and for that we are grateful. Our group members will definitely be taking what we learned here to apply to our work in the future.Thank you, to the TA and the instructor for a fun semester and we wish you all the best moving forward.

References:

Here are some references and some sources that helped us develop Slimeshare.

- Traversy Media/Brad Traversy Charoom tutorial: https://github.com/bradtraversy/chatcord
- Socket.io chatroom tutorial: https://www.tutorialspoint.com/socket.io/socket.io_chat_application.htm
- Javascript Tutorials: https://www.w3schools.com/js/
- HTML Tutorials: https://www.w3schools.com/html/
- CSS Tutorials: https://www.w3schools.com/css/
- MongoDB Tutorial with Node.js: https://www.w3schools.com/nodejs/nodejs_mongodb_create_db.asp