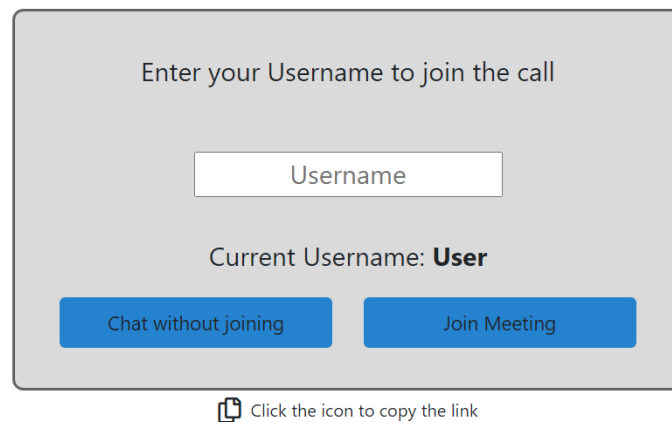# Microsoft Teams Clone

ADITYA AGARWAL

OVERVIEW

This is a Microsoft Teams Clone which is aimed at giving the user an experience similar to Microsoft Teams, in the way that the user would be able to chat using Video Calls, would be able to text chat with all the participants, and would be able to share their screen to all the participants present in the meeting. The technologies utilized in the making of this project were PeerJS for peer-to-peer video calling which is done through WebRTC, and socket.io for communication between client and server. Node.js was used for the server.

GOALS

1. Making a basic video calling application through which two users would be able to effectively talk to each other.
2. Building on that basic infrastructure with additional features like start/stop video and audio, text chat, and screen sharing.
3. Developing a user-friendly User Interface.

Username Page

Microsoft Teams Clone

Enter your Username to join the call

Username

Current Username: **User**

Chat without joining   Join Meeting

Click the icon to copy the link

Upon opening the application link, this is the first screen you see. Here, you can enter your desired Username after which you can either Text chat with the participants already present in the meeting, without joining the meeting itself or you can directly join the meeting. You can also click on the copy link icon to share the link with others to join the same meeting room.

The default username for a first-time user is "Anonymous". If it's a returning user, the app will remember the previous username and the user need not set it again.

Main Page
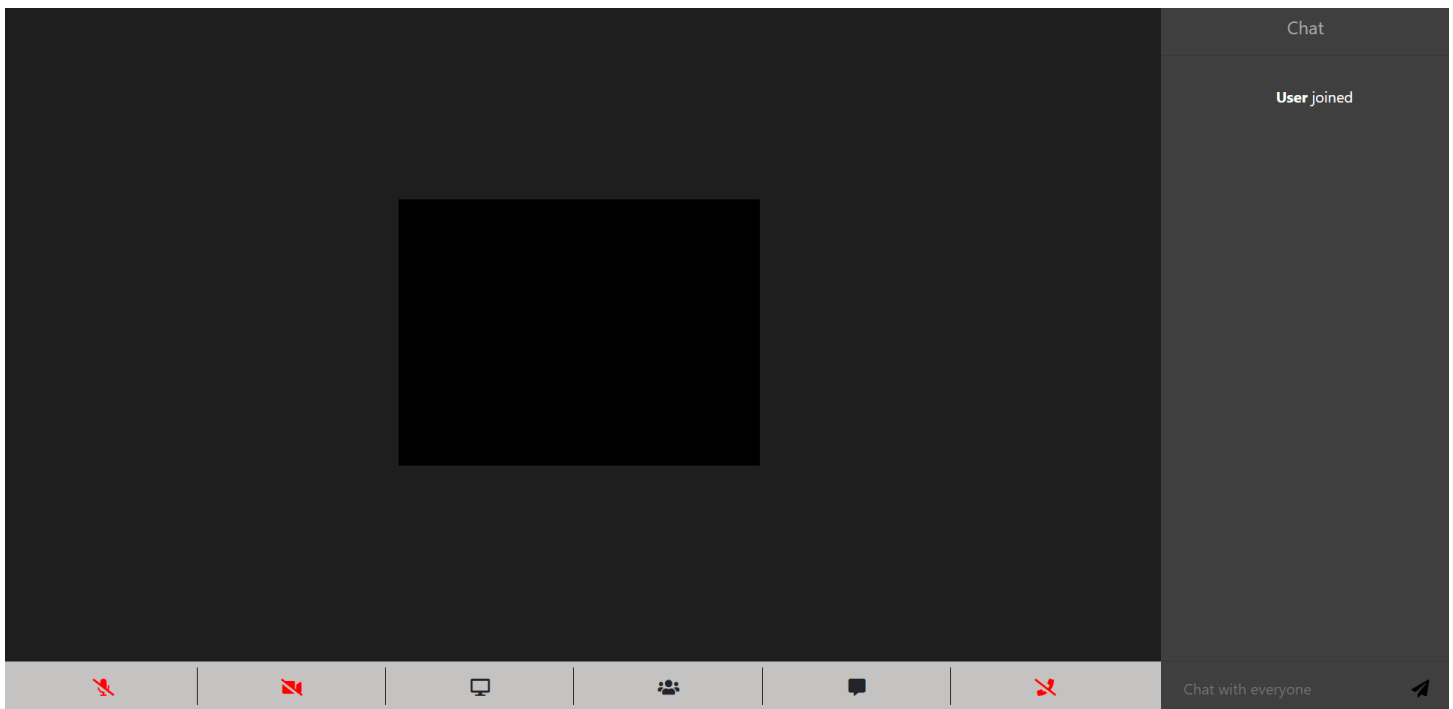
When the user joins the meeting, this screen is presented. By default, the Audio and Video are switched off, and the user can switch them on whenever they feel like starting video chatting with others.

The following buttons are available in the main window:

1. Toggle Audio - The user can mute/unmute themselves using this button.
2. Toggle Video - The user can switch their video on/off using this button.
3. Share Screen - The user can share their screen with the other participants. Only one user can share their screen at a time. If another

user is already sharing their screen, that user's screen sharing is overridden and you become the sole screen sharer.

4. Users List - Using this button, the user can toggle the Users list which shows all the users currently present in the meeting.

5. Chat Window - Using this button, the user can toggle the Chat window which messages sent by users inside and outside the meeting, and shows all updates in the meeting such as users joining/leaving, or information regarding screen presenters.

6. Leave Meeting - Clicking this button takes you to the leave meeting page where you can continue chatting with other participants without being in the meeting itself.
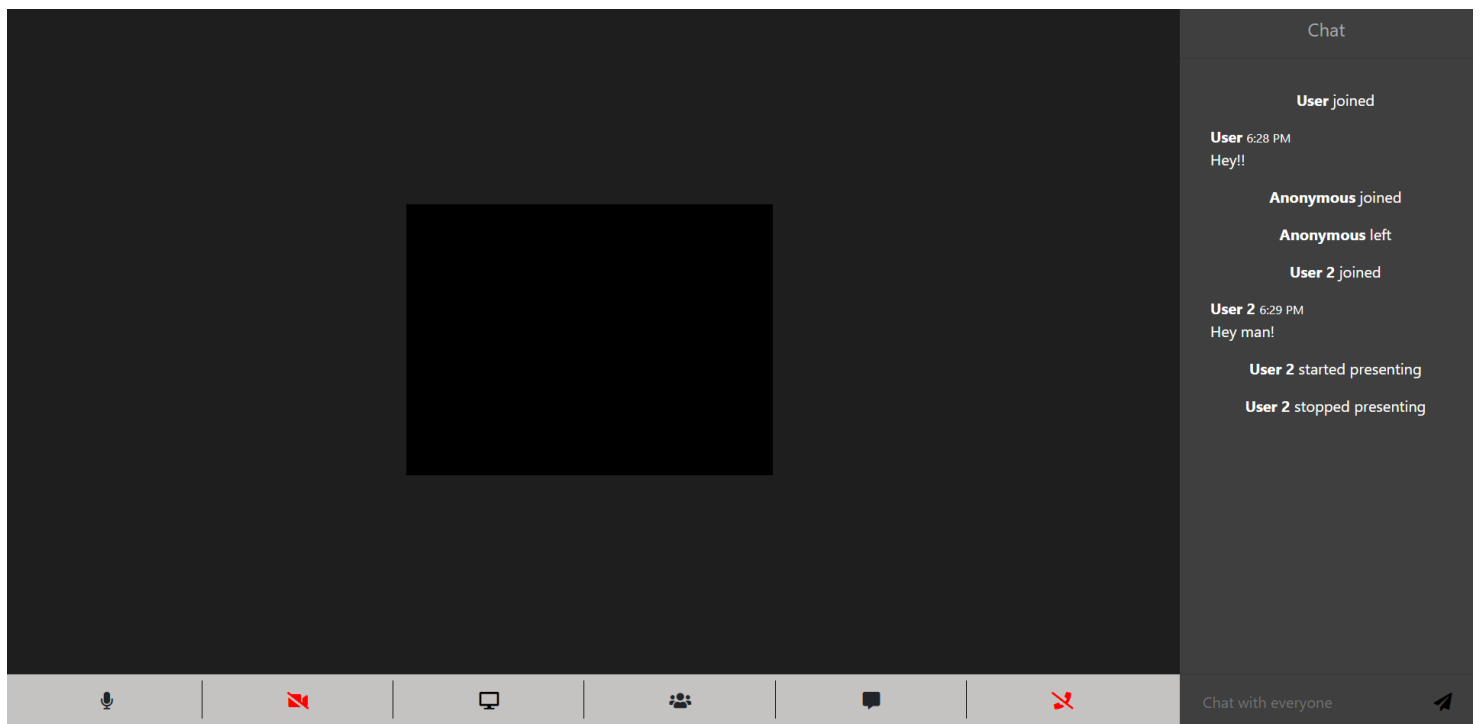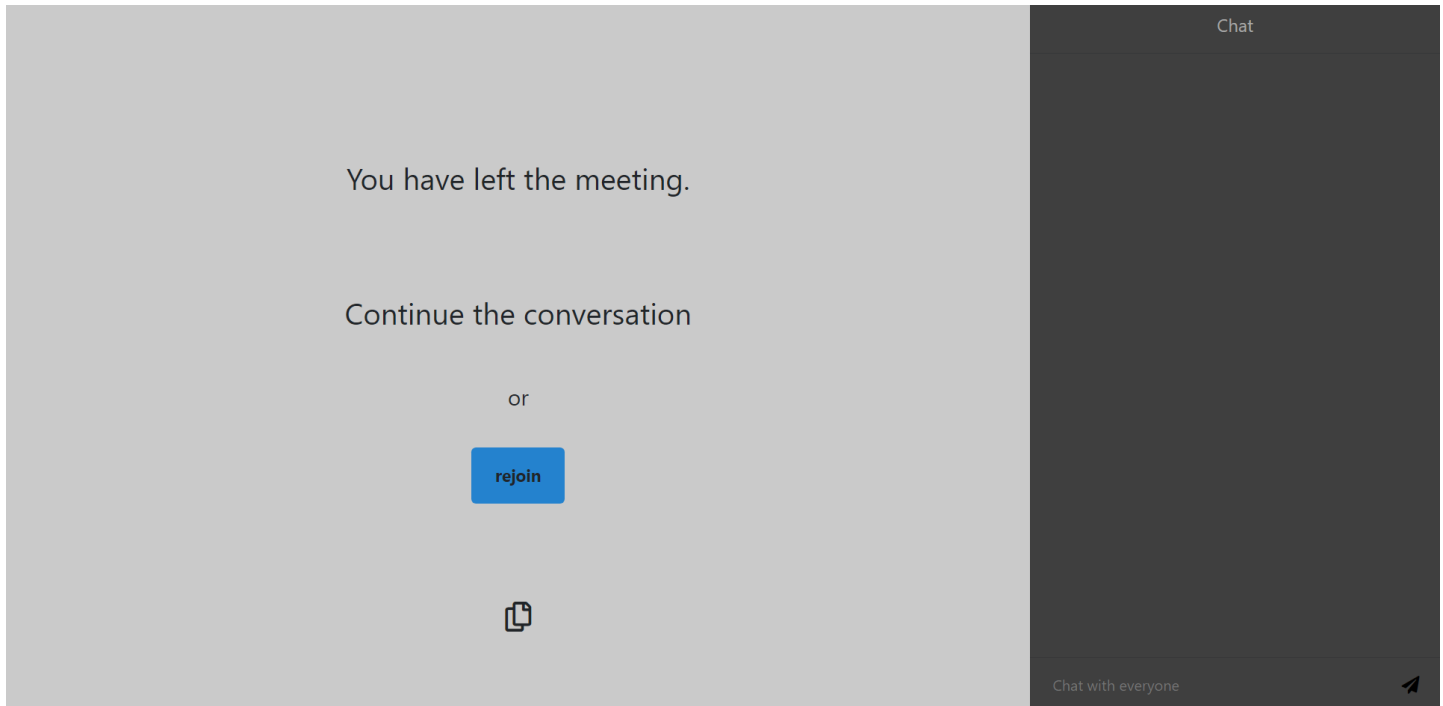

The chat window provides all messages and updates that have occurred since the user joined the meet. Messages appear with a timestamp.
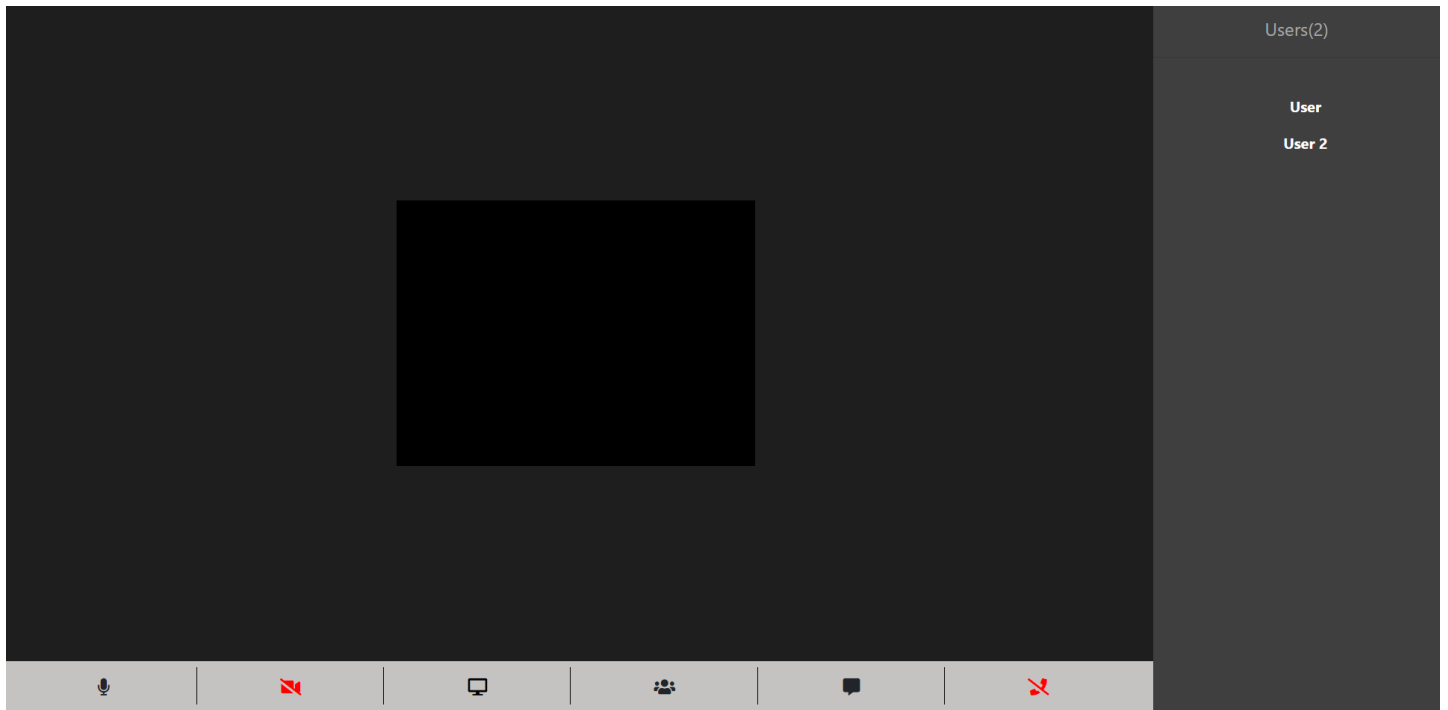
The user list shows all the participants currently present inside the meet, along with the number of participants.

Left Meeting Page

You have left the meeting.

Continue the conversation

or

rejoin

Upon clicking the leave meeting button, the user is taken to the 'Left Meeting' page, where the user can either click on the rejoin button, upon which they will be redirected to the username page of the same chat room, or they can chat with the participants present inside the room in case they forgot to convey an important message. The copy link button is available here, too. If the user is chatting through this window, their name appears along with an asterisk symbol, and the user's name doesn't appear inside the Participants list.

Chat without joining Page
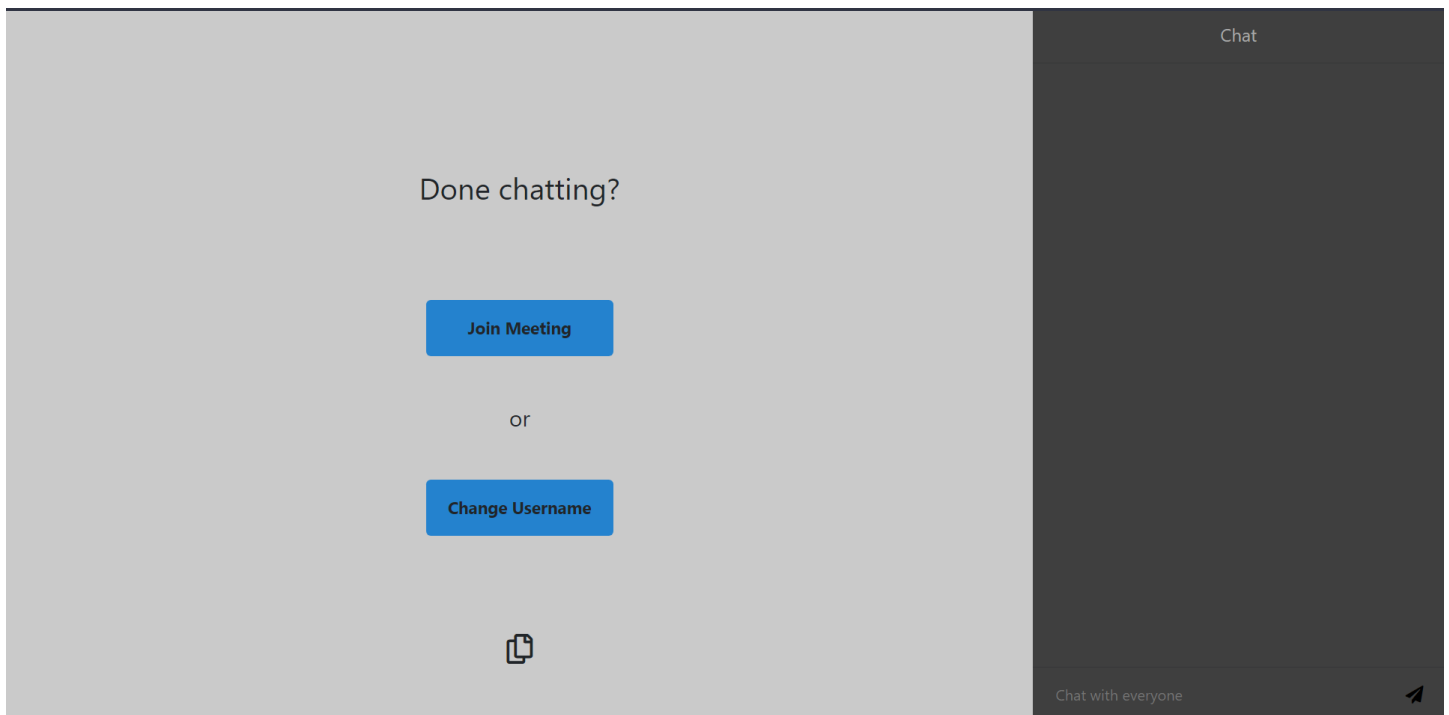
This is the page that comes up when the user clicks on the "Chat without joining" button. It is similar to the "Left Meeting" page, in that there is a chat screen where the user can chat with the participants in the meeting, in the event that the user wants to convey a message without joining the meeting, or before joining the meeting. The user's name appears with an asterisk, like the "Left Meeting" page and the user's name doesn't appear in the Participants list. The copy link button is available here, too in case the user wants to share the meeting link with others.

Limitations

1. Once the user gives permissions, the webpage needs to be reloaded for the video chat application to effectively work.
2. Once the user changes pages, the chat history gets deleted and the user can only see the chats that have been communicated after the user had joined the page. This could have been solved with the help of a database but due to lack of time, I was unable to implement it.

My Plan

1. In the first week, I decided to research the potential technologies that could be utilized in the making of a Teams Clone. I found two major options - Jitsi and WebRTC. I decided on WebRTC and planned on using Node.js for the server connections. I found some YouTube tutorials and got started on researching.
2. For the second week, I decided on PeerJS, which is based on WebRTC for easier implementation, and got started with the code. I was able to make basic video calling functionality and was also able to implement a bit of the chat feature.
3. For the third week, I focused on improving the UI and added screen-sharing functionality.
4. In the fourth week, the surprise Adapt feature was introduced, and I focused on that and made changes accordingly. I had to work on redesigning the whole flow of the app, as an external chat was required.

My Experience

I started off this project with zero knowledge about web development and with the help of a few long YouTube tutorials, I was able to learn Javascript in no time. I saw a basic short tutorial on how to implement basic Video Chatting using Node.js and PeerJS and built an HTML page along with a

chat feature. Overall it has been a great experience for me and this program was able to push me out of my comfort zone and get me started with the world of web development.