Assignment Cover– be sure to keep a copy of all work submitted

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Course and Course Code **CC101 – SWC2373**		Submission Date: **10 NOVEMBER 2023**
Assignment No. / Title **EMERGING TECHNOLOGY – FINAL PROJECT**		Extension & Late submission: Allowed / Disallowed
Assignment type: **INDIVIDUAL**	% of Assignment Mark **40%**	Returning Date:

Penalties:

1. 10% of the original mark will be deducted for every one-week period after the submission date
2. No work will be accepted after two weeks of the deadline
3. If you were unable to submit the coursework on time due to extenuating circumstances you may be eligible for an extension
4. Extension will not exceed one week

Declaration: I/we the undersigned confirm that I/we have read and agree to abide by these regulations on plagiarism and cheating. I/we confirm that this piece of work is my/our own. I/we consent to appropriate storage of our work for checking to ensure that there is no plagiarism/ academic cheating.

Signature:

This section may be used for feedback or other information

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1. Introduction of the project

This project aims to develop a secure and user-friendly conferencing web application for students, allowing communication without revealing personal phone numbers. This application operates 24/7 as a central hub for seamless connectivity. Key features include real-time audio or video communication, screen sharing, chat or messaging, participant management, scheduling with invitations, integration with productivity tools, and robust security measures. The development, open to any programming language, strongly encourages the use of frameworks and REST APIs to ensure scalability and security for the student social portal.

1.1 What is web conferencing?

Web conferencing is a way to communicate online with people in real-time. It involves audio and video communication and allowing people to talk and see to each other through the internet. The platforms have features like screen sharing and chat for various collaboratives activities like remote work and education.

1.2 What is the example of web conferencing apps?

The example of web conferencing apps, such as Zoom, Microsoft Teams, Google Meet, Cisco Webex, and Skype. These platforms provide users audio and video communication, screen sharing, chat, participant management, and scheduling features. These features are widely used for virtual meetings, collaboration, and remote work due to their comprehensive functionalities.

1.3 What are the technologies behind the apps?

The technologies behind web conferencing apps use tools like HTML, CSS, and JavaScript for web development, along with frameworks like React. Furthermore, real-time communication relies on protocols like WebRTC, TCP, and UDP. The backend, managed by languages like Node.js and databases like MySQL, supports server-side operations. Codecs and media servers handle audio/video, while security features use protocols like OAuth and HTTPS. Scalability and storage are facilitated by cloud services from providers like AWS.

2. Objective

Creating a web conferencing application that interfaces with the Webex Teams API is the aim of this project. The goal of the software is to improve online conferencing by giving users easy access to recent chats and designated areas.

3. Process of apps development

In the development process, our focus is to seamlessly integrate Webex Teams functionality into a user-friendly interface for effective communication. The process involves establishing a connection with the Webex API, managing UI elements, and implementing authentication mechanisms. The application structure follows the Webex Teams SDK, with dependencies including the Webex Teams SDK itself.

3.1 What need to be done?

The code is designed to create a web page with two Webex widgets like Recents and Space. It fetches a Webex Teams access token from the query parameters or uses a default token. The Recents widget displays recent events, and the Space widget allows the selection of a room, subsequently displaying information and messages related to that room.

3.2 How the code works?

The HTML file includes JavaScript code that initializes two Webex widgets, Recents and Space. It sets up event listeners to handle room selection events and dynamically updates the Space widget based on the selected room.

3.3 Which code responsible for establishing API connection?

The code uses the Webex Teams JavaScript SDK to establish the API connection. The SDK is included using script tags for the Recents and Space widgets, and the ‘webex’ object is used to interact with the Webex Teams API.

3.4 API that has been used, which code is for UI?

The UI is primarily defined in the HTML file, and the appearance of the Recents and Space widgets is managed by the Webex Teams SDK. The function initializes the widgets, and the CSS stylesheets linked in the head section control the visual presentation.

3.5 Which code responsible for authentication?

The authentication is handled by obtaining the Webex Teams access token. The code checks for the token in the query parameters and uses a default token if not provided. This token is then used to authenticate and interact with the Webex Teams API.

3.6 What is the structure of the framework?

The code uses the Webex Teams JavaScript SDK, a framework provided by Cisco for interacting with the Webex Teams API. The SDK simplifies the integration of Webex features into web applications.

3.7 Which dependencies that you have been using?

The code relies on the Webex Teams JavaScript SDK as dependencies. These dependencies are included using script tags in the HTML file. Ensuring that the required functionalities are available during the application’s execution.

4. Demonstrate the use of APIs in the application.

1. **Access Token Retrieval:**

   An access token for Webex Teams is obtained by the application. By acting as an authentication mechanism, this token enables the application to securely communicate with Webex APIs.

2. **Recents Widget Initialization:**

   The Webex Teams SDK is used to initialize the Recents widget. The application can retrieve current events from the user's Webex Teams account by using the access token that was received.

3. **Event Handling (Callback Function):**

   The program watches out for certain occurrences, including choosing a room. The callback function is activated when a room is picked. This function demonstrates the ability to handle events in real-time by logging the type of occurrence and displaying a notification.

4. **Space Widget**

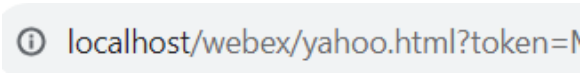
   The application dynamically connects with the Webex Teams API upon room selection. The current Space widget is deleted, and a new one is injected.

5. Testing result of your apps

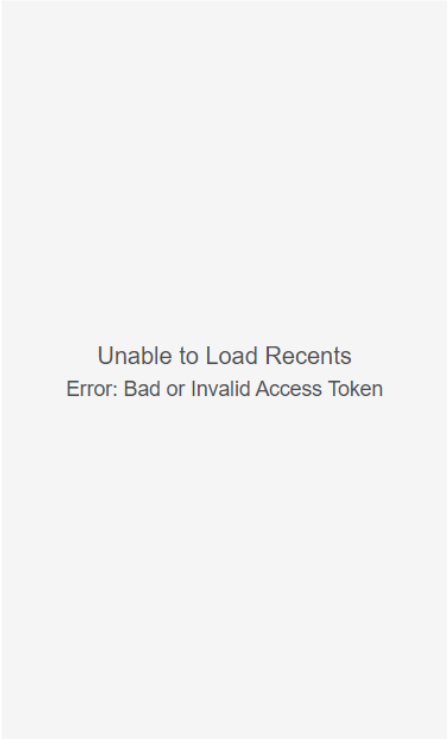
1. Confirmed that access tokens and authentication were handled correctly.

2. Verified that API calls for current discussions and space interactions were made to Webex Teams.

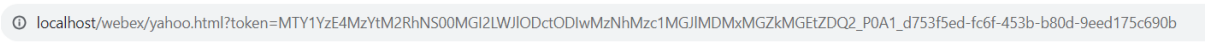
3. Experimented with dynamic user interface adjustments in response to Webex Teams user interactions.



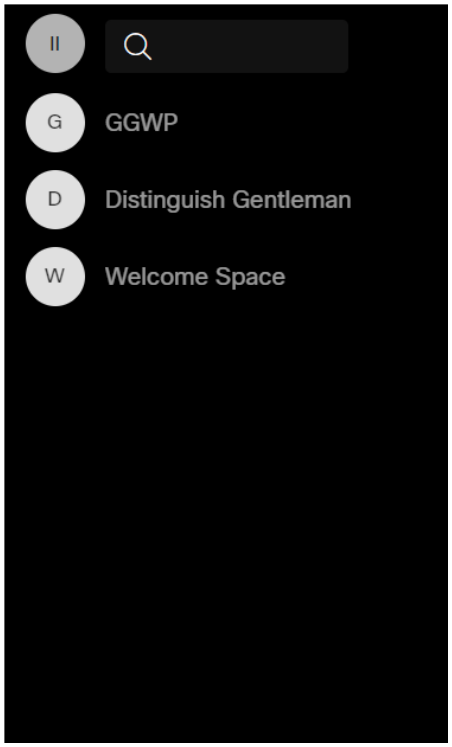
First of all, we must run the html code from localhost, and make sure Apache in xampp is enabled.



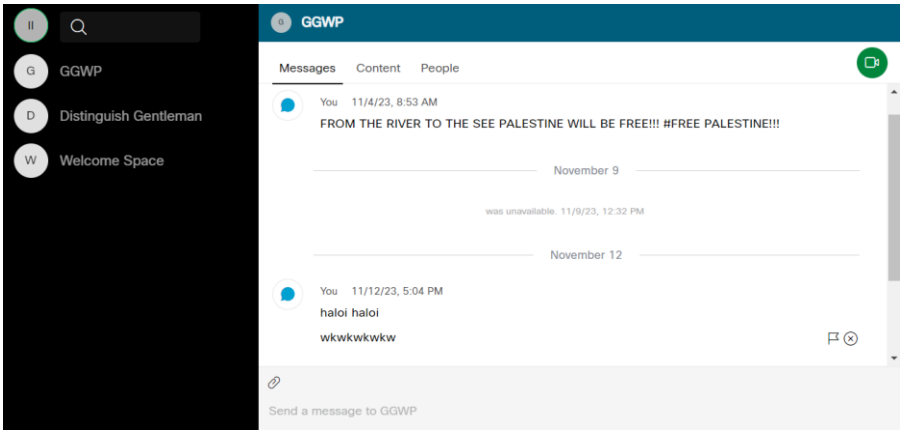
After we can run the web page, it will show a display like this that our web page has run successfully but is not complete yet because there is no valid token to run this page.



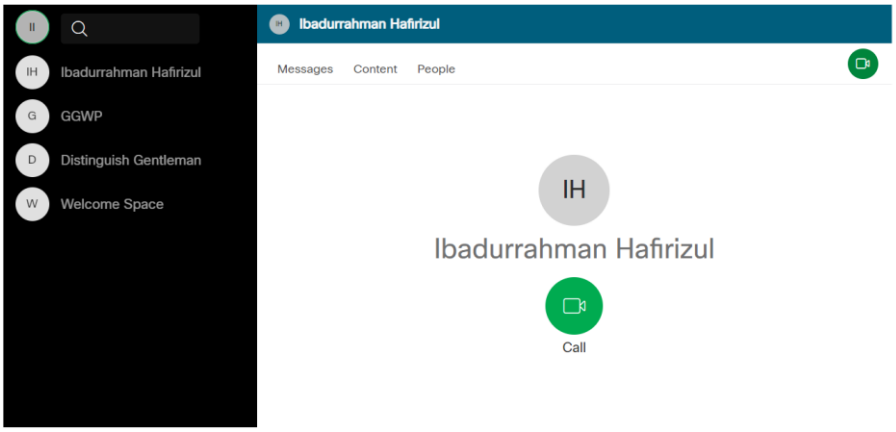
So, after that we need to put our token on the link and make sure that our token is valid to use to run the web. The format must be (?token=”Your token”).



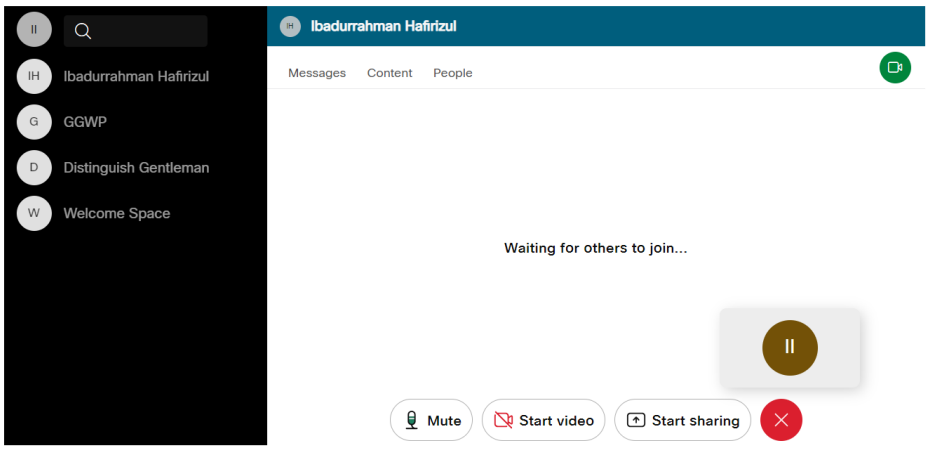
When we have successfully entered the token, it will bring us into our account where it will display all of our rooms in the Webex.



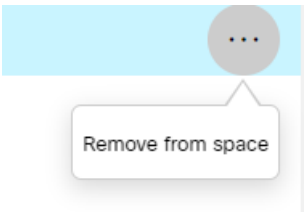
We can also message with anyone we want and create a group to enjoy with friends.



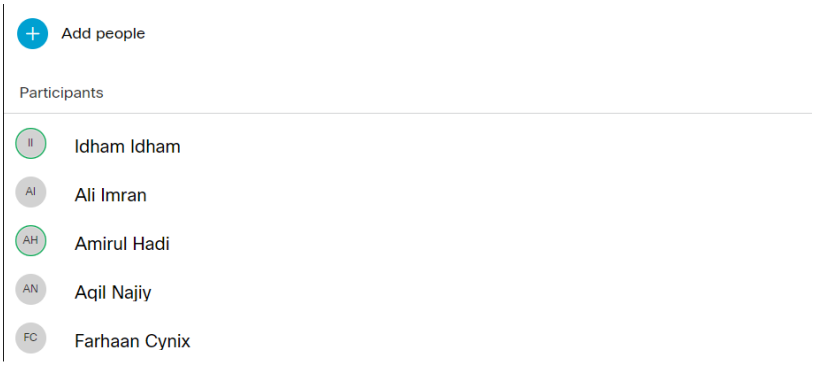
We can also make a video call with our friends or a teacher who wants to make a class to teach students can also do it and people who work who want to make an online meeting can also be made on webex.



In the video call, we can also see which here we can share our computer screen with others, mute or unmute, open the camera or close the camera and others.



For group messages, the host can also remove participants if necessary.



For group messages, the host can also add participants if necessary to be added to the group.

6. Conclusion

To Sum Up, through the development of this conferencing web application, the objectives were successfully achieved. The system effectively empowers users to communicate and collaborate in real-time over the internet. Also, access essential features for conferencing web application. This has been developed to a user-friendly conferencing web application. The application prioritizes secure communication without revealing personal phone numbers. The features include real-time audio and video conversations, screen sharing, chat and messaging capabilities, participant management, invitations, integration with productivity tools, and robust security features. Overall, the project strives to deliver a seamless and secure conferencing experience for students.

7. Reference

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8. Appendix

Link To Github: https://github.com/Idhaizs/SWC2373--EMERGING-TECHNOLOGIES