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Course and Course Code: EMERGING TECHNOLOGIES // SWC2373		**Submission Date:** 10/11/2023
Assignment No. / Title: PROJECT		**Extension & Late submission:** **Allowed / Disallowed**
Assignment type: Individual	**% of Assignment Mark**	**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**

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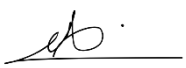
Signature: 

Project Report: Web Conferencing Application

Introduction

Web conferencing is a technology that enables users to hold meetings, seminars, or presentations over the internet. It allows participants to interact in real-time through audio, video, and chat functionalities. Various web conferencing applications exist, such as Zoom, Microsoft Teams, and Google Meet, which have gained widespread popularity for remote collaboration.

The project at hand involves the development of a web conferencing application using the Flask framework in Python. The application includes features like user registration, login, creating meetings, joining meetings, and a dashboard for user interaction.

Objective

The primary objectives of the project are as follows:

1. Implement user registration and authentication.
2. Develop a user-friendly dashboard.
3. Create a mechanism for users to create and join meetings.
4. Integrate a web conferencing SDK to enable real-time communication.
5. Implement proper testing to ensure the functionality and security of the application.

Process of App Development

Technologies Used:

- **Flask**: A web framework in Python for building the application.
- **Flask-WTF**: An extension for handling web forms in Flask.
- **WTForms**: A library for form validation and rendering.
- **Flask-SQLAlchemy**: A Flask extension for interacting with SQL databases.
- **Flask-Login**: Provides user session management.
- **Bootstrap**: Used for front-end styling.
- **Zego UIKit Prebuilt**: A prebuilt UI toolkit for integrating web conferencing features.

Code Structure:

- **main.py**: Contains the main application code, route definitions, and database models.
- **base.html**: Base HTML template used for other pages with common styling.
- **dashboard.html**, **join.html**, **login.html**, **meeting.html**, **register.html**: Templates for specific pages.
- **style.css**: CSS file for styling.

User Authentication:

User authentication is handled using Flask-Login, where user information is stored in a SQLite database. The **Register** class in the **main.py** file represents the database model for user registration.

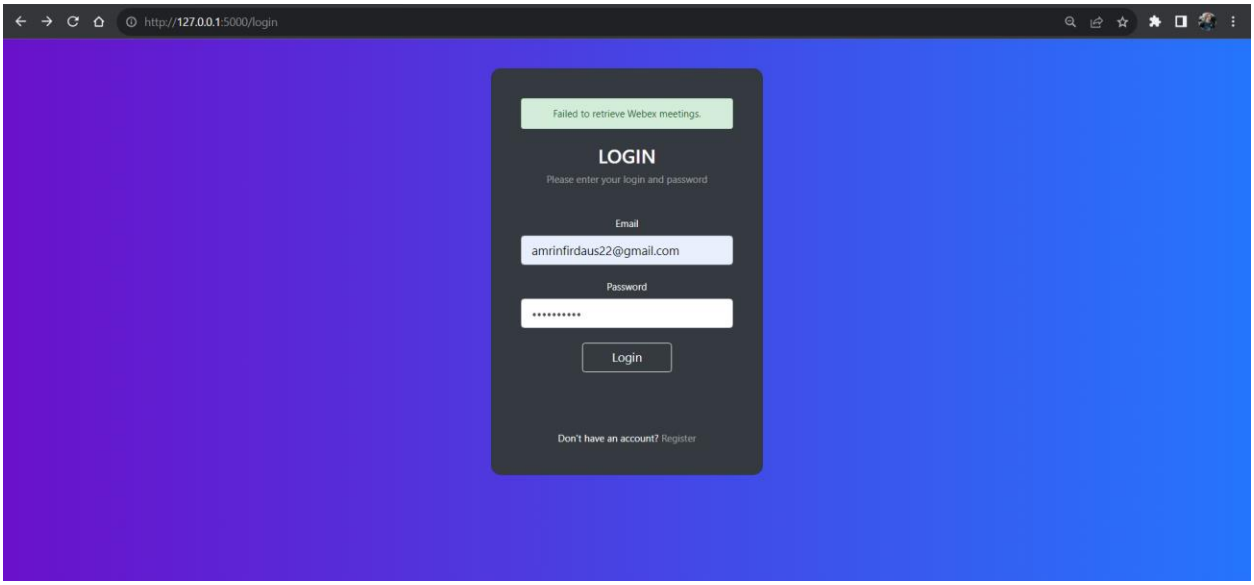
API Integration:

The application integrates the Zego UIKit Prebuilt, a web conferencing SDK, to enable video conferencing functionalities. The SDK is loaded in the **meeting.html** file, and room creation/joining logic is implemented in the associated JavaScript code.

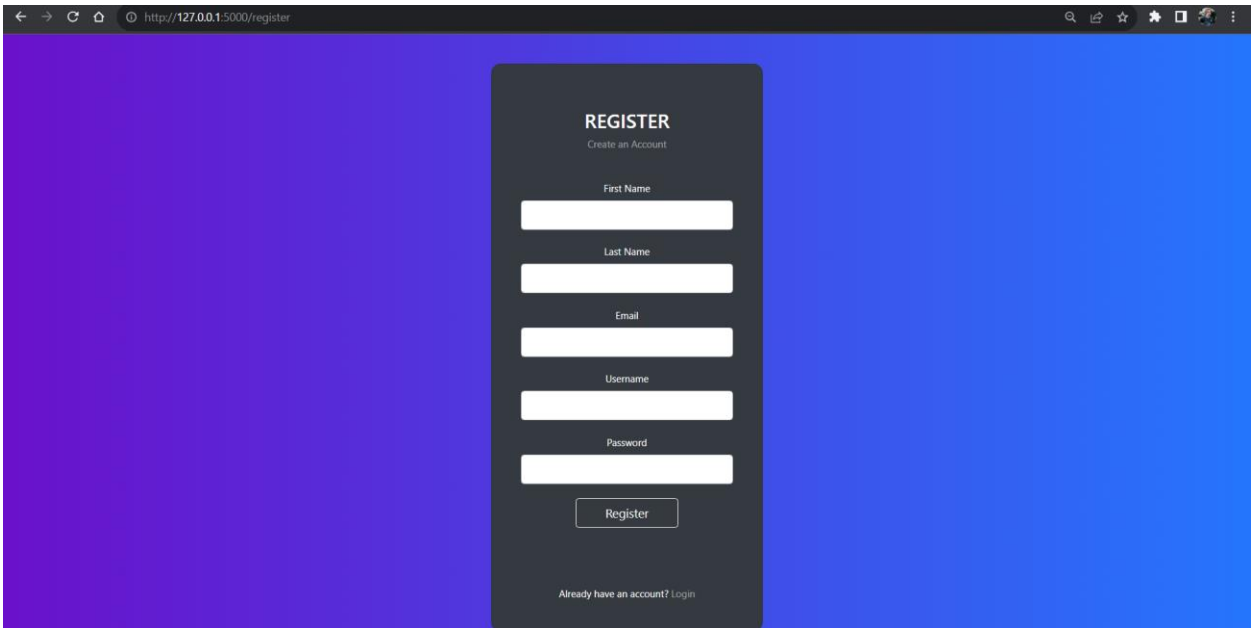
Testing:

Testing is performed to ensure the proper functioning of the application. This includes testing user registration, login, meeting creation/joining, and dashboard functionalities. Various test cases are executed to validate the application's behavior.

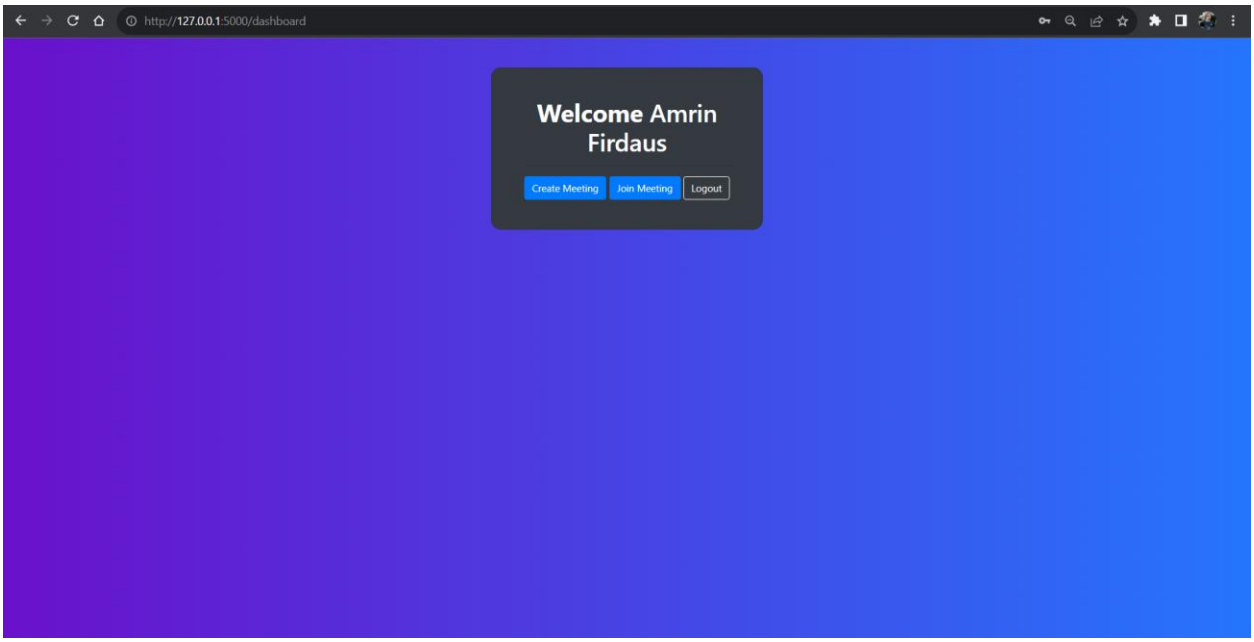
Login:



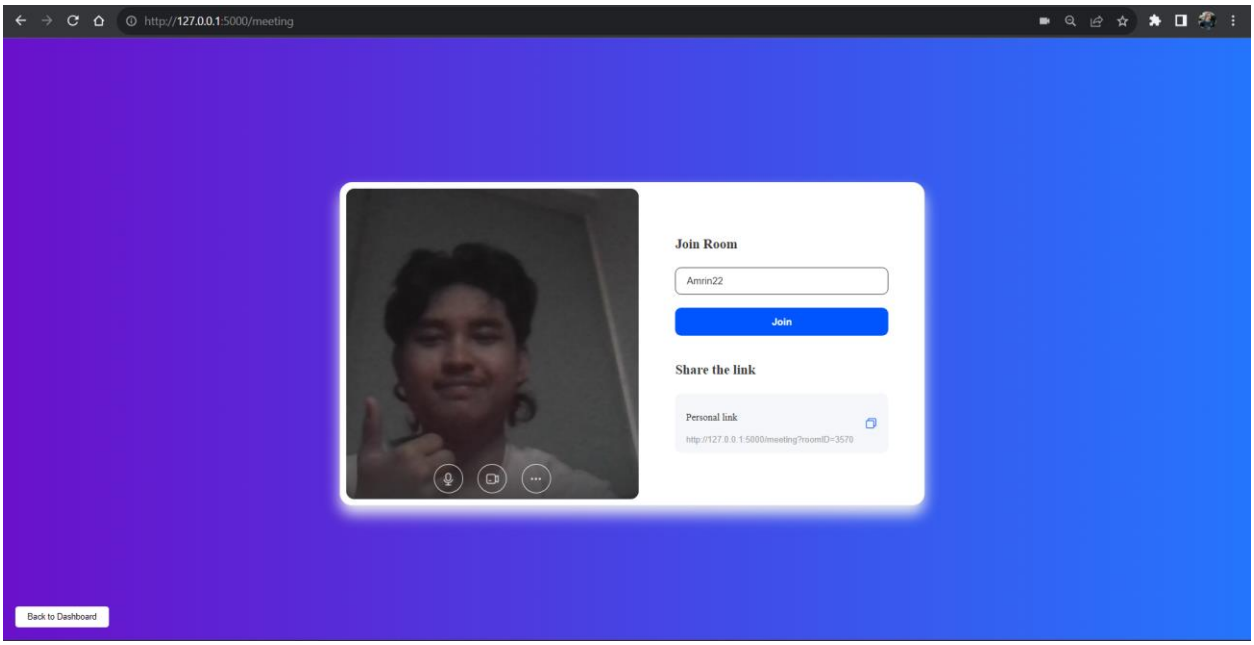
Register:



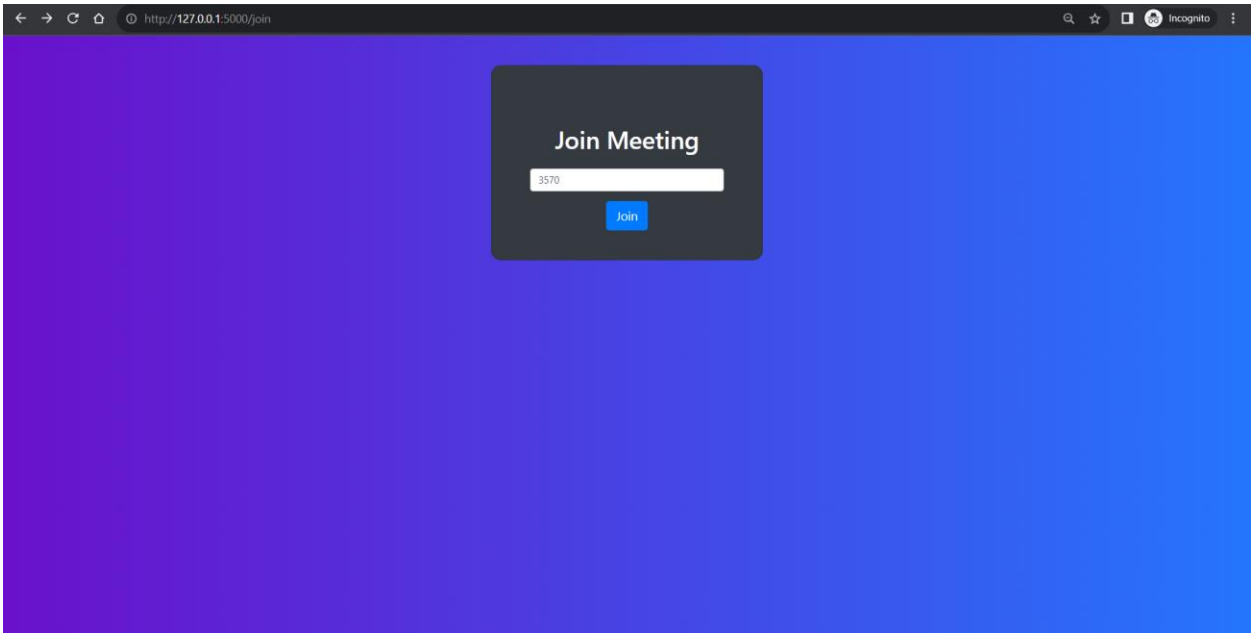
Dashboard:



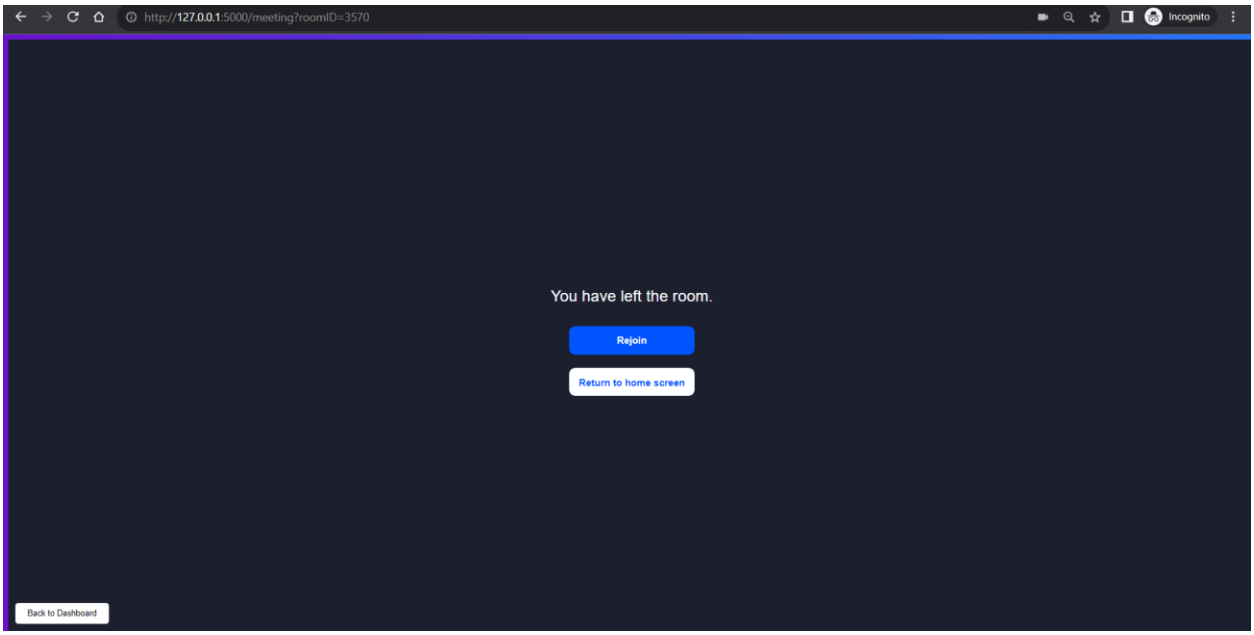
Create Meeting :



Join Meeting:



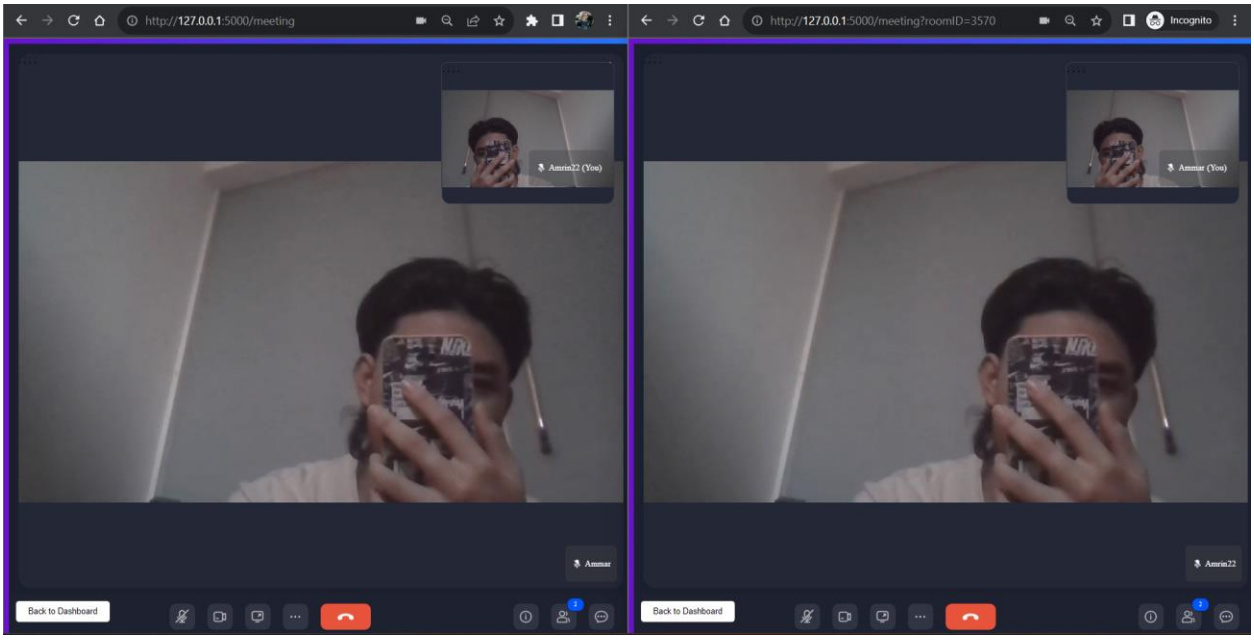
Leave Call :


http://127.0.0.1:5000/meeting?roomID=3570
Incognito
You have left the room.
Rejoin
Return to home screen
Back to Dashboard

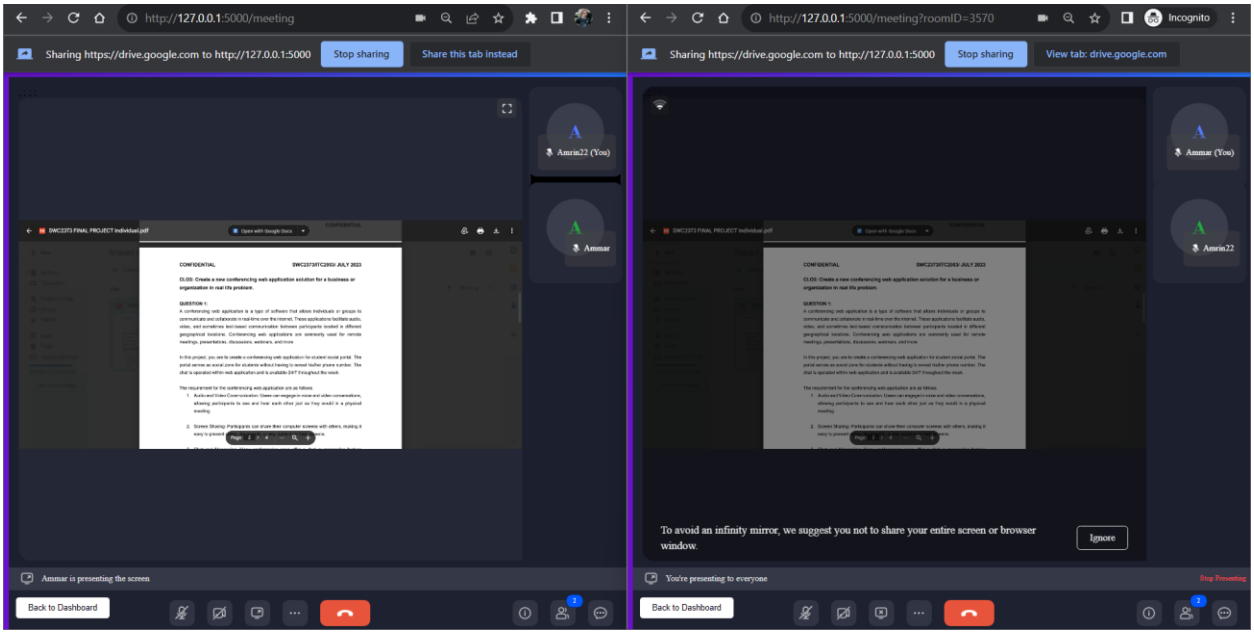
Demonstration of API Use

The Zego UIKit Prebuilt SDK is utilized to create and join meetings. The SDK enables the following functionalities:

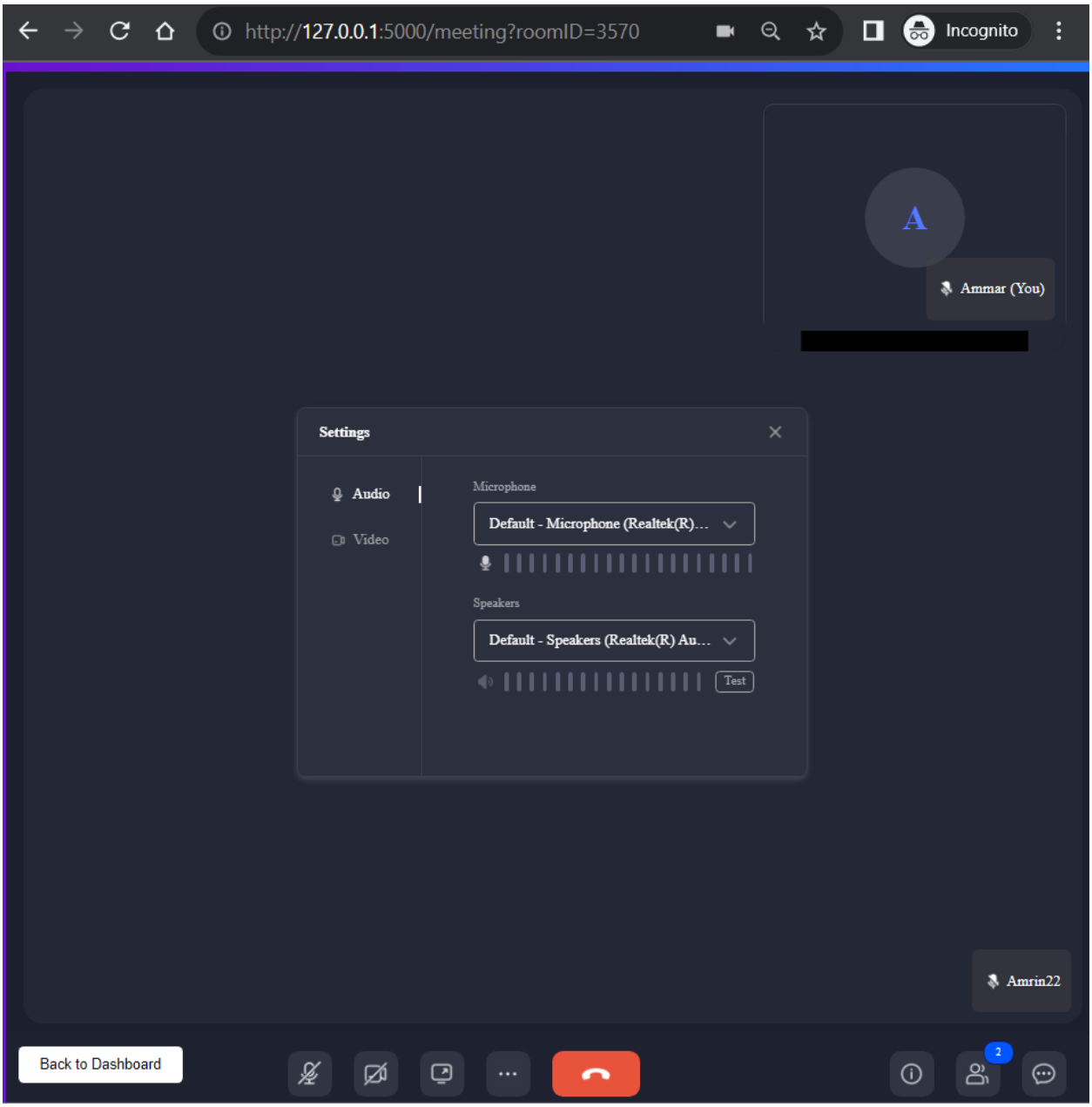
- Video and audio communication in real-time.



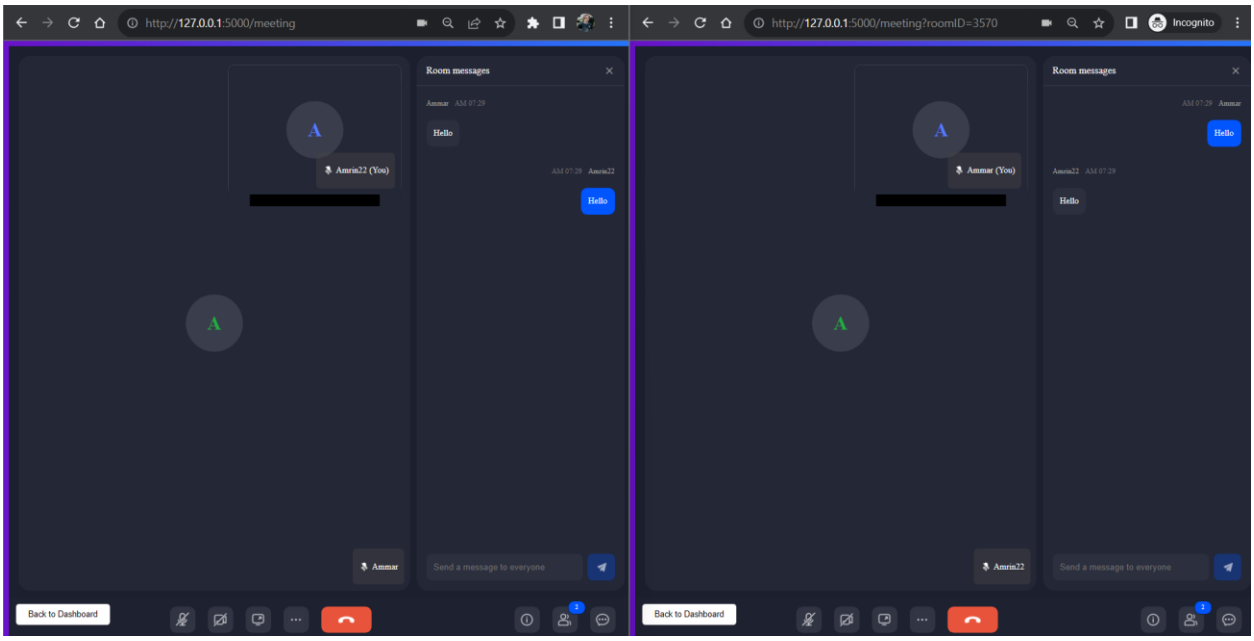
- Screen sharing capabilities.



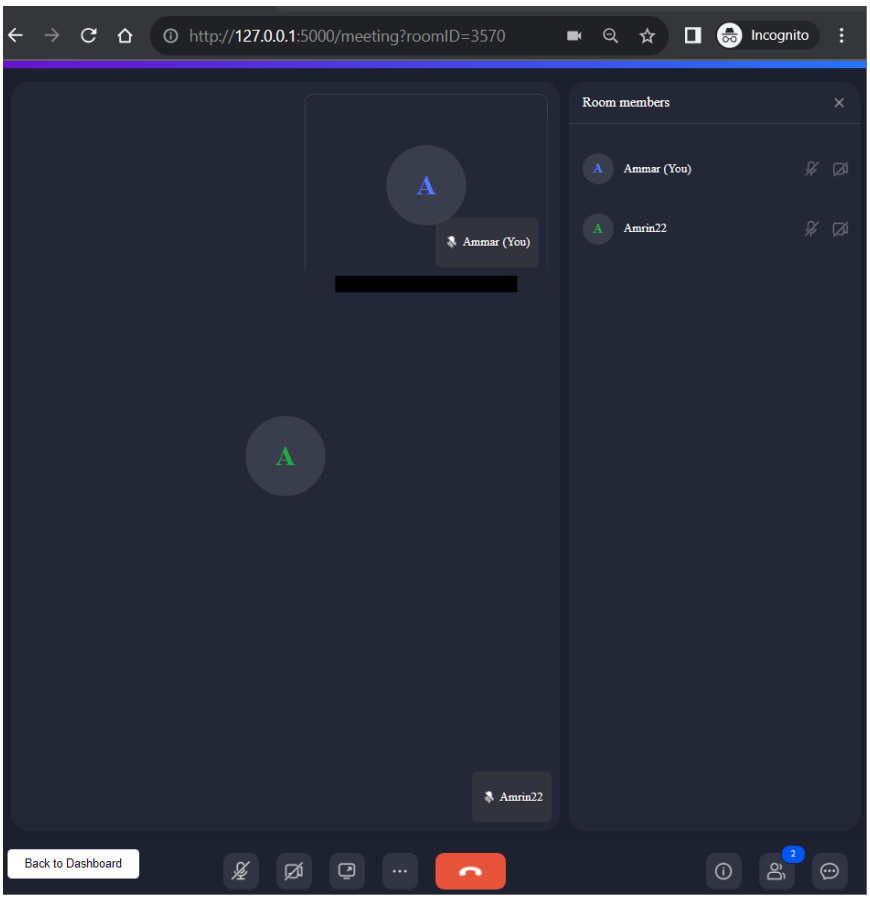
- Toggle options for microphone and camera.



- Text chat functionality.



- User list display



Testing Results

The application has been thoroughly tested to ensure:

- Successful user registration and authentication.
- Seamless creation and joining of meetings.
- Proper integration and functioning of the Zego UIKit Prebuilt SDK.

Conclusion

The project has successfully achieved its objectives, providing a functional web conferencing application with user authentication, a user-friendly dashboard, and integrated meeting functionalities. The application serves as a practical example of web conferencing technology implemented using Flask and relevant libraries.

References

1. Codecademy. (2023). Learn Python. https://www.codecademy.com/catalog/language/python

2. W3Schools. (2023). Python Tutorial. https://www.w3schools.com/python/

3. Amazon Web Services. (2023). What is API? AWS Documentation. https://aws.amazon.com/what-is/api/#:~:text=API%20stands%20for%20Application%20Programming,other%20using%20requests%20and%20responses.

4. 3CX. (Year, Month Day). Web Conferencing. https://www.3cx.com/pbx/web-conferencing/

5. Smith, J. (2023, November 10). "Cisco Webex: Revolutionizing Online Collaboration." *Tech News Today*. https://www.technewstoday.com/cisco-webex-revolution/

6. Jones, M. (2022). *Python Programming for Beginners*. O'Reilly Media.

7. ZegoCloud. (2023). ZegoCloud API Documentation. https://www.zegocloud.com/api

8. Twitter Developers. (2023). Twitter API Documentation. https://developer.twitter.com/en/docs/twitter-api

9. Coursera. (Year, Month Day). What is an API? Coursera Articles. https://www.coursera.org/articles/what-is-an-api?utm_source=gg&utm_medium=sem&utm_campaign=B2C_APAC__branded_FTCOF_courseraplus_arte_PMax_set2&utm_content=Degree&campaignid=20520149492&adgroupid=&device=c&keyword=&matchtype=&network=x&devicemodel=&adpostion=&creativeid=&hide_mobile_promo&gclid=Cj0KCQiAo7KqBhDhARIsAKhZ4uhc0lpEZle-SI9kinEzT7ZnrDUWABdDo2l2zqmz-Lw8ri2QLzbRVSkaAsjjEALw_wcB

Appendix

GitHub Link= https://github.com/amrin234/swc2373Project