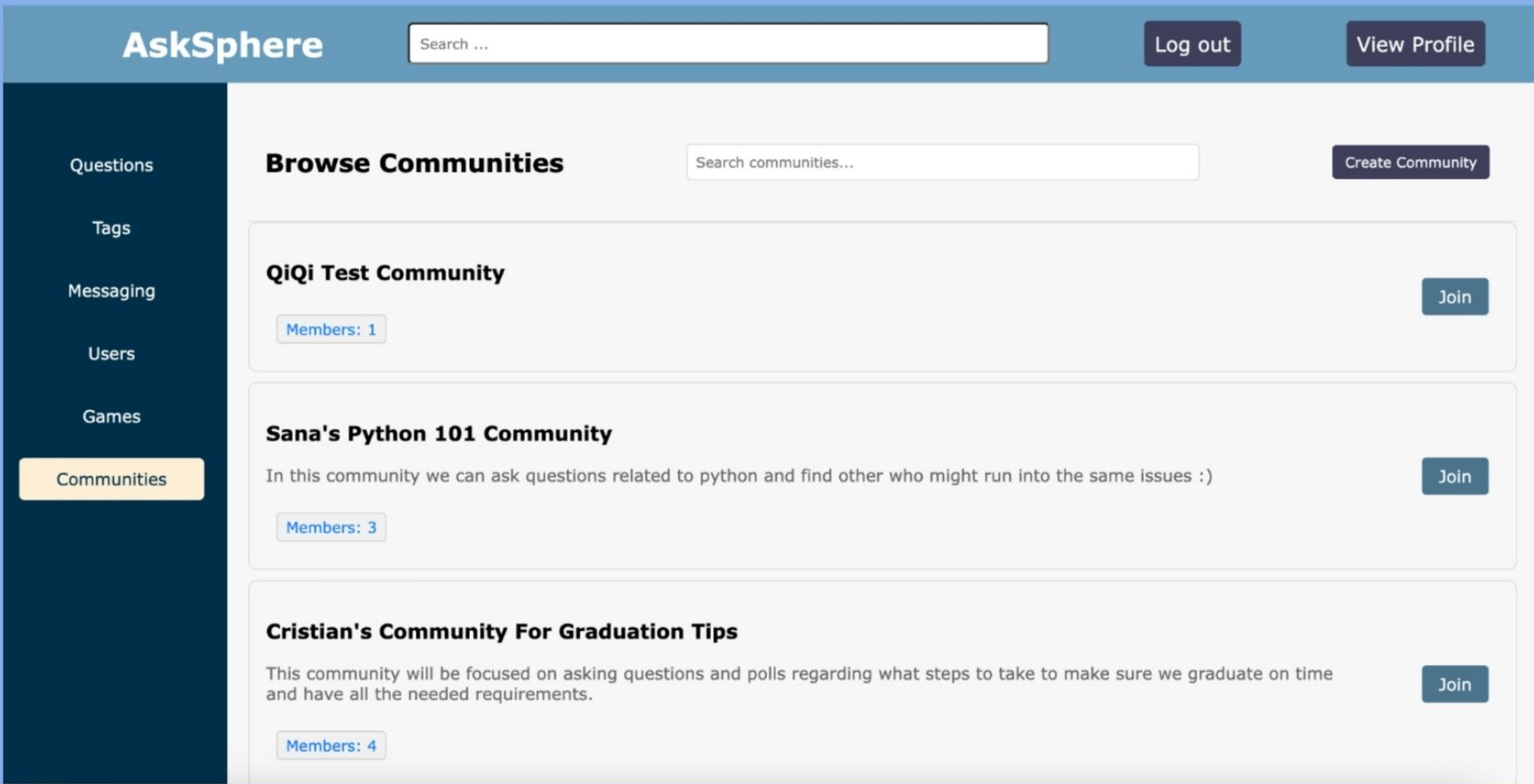
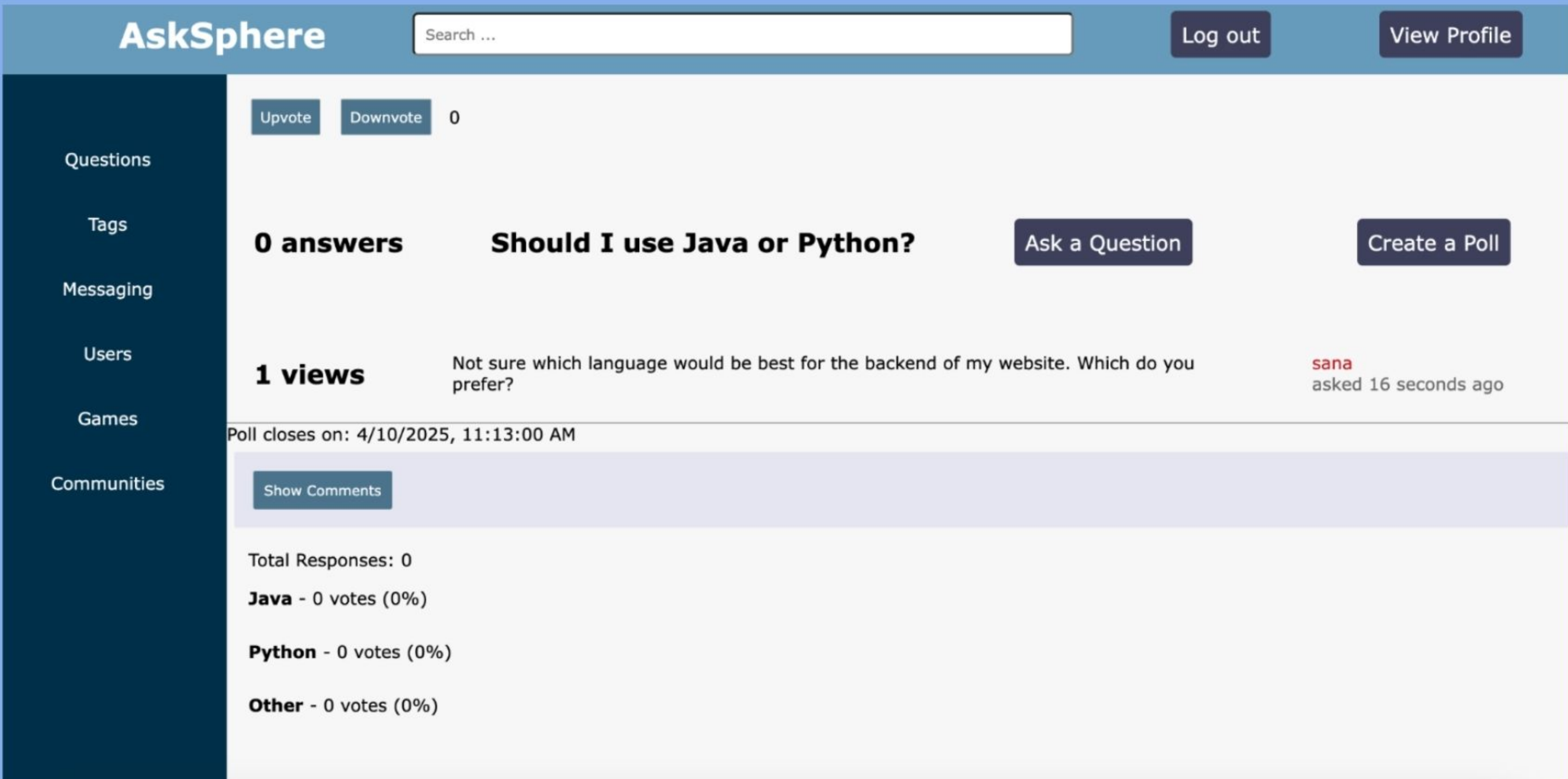


CS4530 Final Project: AskSphere

Group 112

Introduction

- The current implementation of StackOverflow provides essential features such as question and answer posting and direct messaging, but it lacks the ability to foster a strong online community. This limitation arises from the lack of interactive features that allow users to build connections beyond just answering questions. To address these gaps, we aimed to introduce new functionalities and improve the overall quality of life on the platform.
- Our project introduces new features, including the ability for users to post and respond to polls, alongside the current traditional question and answer posts. Polls will allow users to answer specific prompts with multiple options, enabling quick engagement and insight into community preferences.
- In addition to this, we are implementing a community feature, enabling users to create and join groups, post content visible only to group members, and communicate privately with other members. This feature will help users focus on specific topics and foster a more interactive environment.
- To ensure ease of use, the website's accessibility will be enhanced, allowing a more comfortable experience for all users, including those with visual impairments or using keyboard-only navigation. The platform will be redesigned with these goals in mind, improving not only the functionality but also the overall user experience by making it more inclusive and interactive.



Tech Stack and Design

- We implemented the poll and community features into the existing AskSphere codebase. Each poll is represented as a poll object that includes the title, options, responses, and vote distribution. Polls are stored in the database and linked to specific users via the backend. On the frontend, users can create and respond to polls via a React form that interacts with the backend through API calls using Axios. After submitting a poll response, users can immediately see the poll results, which are dynamically rendered on the page.
- The community feature was designed to allow users to create, join, and interact within communities. Each community is tracked by the backend, where it's stored in a MongoDB database. We used Mongoose to handle schema definitions for both users and communities. Community posts are displayed within the community's specific feed, with the ability to restrict visibility to only members. Real-time updates in both polls and communities are handled using Socket.IO. When a poll response is made or a community post is created, the changes are broadcast to all users who are involved, ensuring real-time interaction.
- For accessibility, we integrated high-contrast mode, screen reader support, and keyboard navigability to improve the user experience for all users, including those with visual impairments or those who navigate using a keyboard. The site is deployed using Render for both the frontend and backend, with MongoDB serving as the database. Our CI/CD pipeline runs automated tests using Jest for the backend and frontend, ensuring continuous integration and reliability for all updates.

Future Work

- In the future, we plan to implement several features that will enhance the user experience and accessibility of the platform. One key feature is enabling users to modify their poll responses after they have already voted. This update will allow users to change their opinion as they see new responses, improving flexibility and interaction. Along with this, we aim to introduce notifications that inform users when a poll has ended, providing them with the final results and showcasing the option that received the most votes.
- Another important enhancement will be the implementation of notifications when a new post is made within a community. This will ensure that users are kept up-to-date with discussions in the communities they are members of, enhancing engagement and communication. Additionally, we plan on introducing a role system that will allow other users, beyond the community creator, to edit the community description. This will facilitate collaborative management and allow for a more dynamic and flexible community structure. To further improve engagement, we plan to allow community members to react to posts within the community. Users will be able to express opinions using interactive features, such as thumbs up or likes-heart reactions, which will encourage more participation.
- On the accessibility front, we plan on helping users who navigate with keyboards or other assistive devices. This is an essential step towards making the website more inclusive. Finally, we will implement a feature that enables users to resize text up to 200% without losing any content or functionality, making the site more accessible for users with visual impairments. These enhancements will improve the overall user experience, ensuring the platform remains interactive, inclusive, and adaptable to diverse user needs.