Forest

CS 4530: Final Project

Source

Demo

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Overview

StackOverflow is a powerful Q&A platform, but it can be difficult to navigate—especially for new users and those with accessibility needs. **Forest** addresses this by improving accessibility, personalization features, and community engagement, making the platform more inclusive, welcoming, and user-friendly.

#1 Accessibility

With our **accessibility helper button**, users can now toggle features like dark-mode, adjustable text size, and a dyslexia friendly font. **Screen reader navigation** has also been improved, with the addition of proper ARIA labels and enhanced keyboard naviagation. The frontend client was also improved for a better user experience!

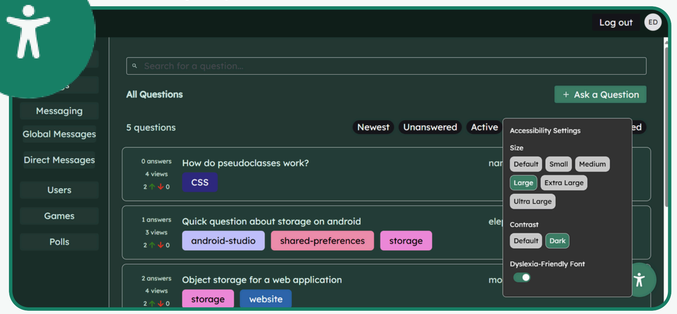
#2 Personalization

Users can now sort questions by **personal preference** and mark answers as **most helpful** to highlight top solutions and improve answer discoverability. **Firebase authentication** keeps the preferences safe. To encourage meaningful contributions, users can also **earn badges and awards for consistent engagement**, helping others, and building reputation within the community.

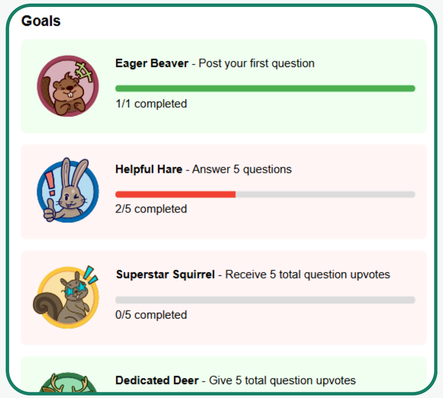
#3 Communities

Our new **Communities** feature lets users join interest-based groups like Frontend Development or Game Dev. Inside each community, users can participate in **polls** to gather input or spark ideas, as well as discover others with similar interests. These tools help foster a sense of connection and make Forest feel more like a collaborative learning space.

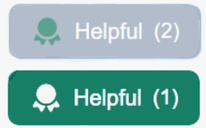
Accessibility helper button icon



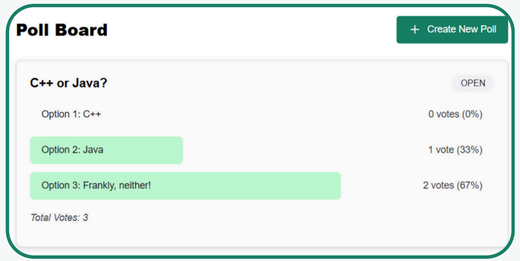
Questions page with large text, dark mode, dyslexia font enabled



Goals, under the profile page



Helpful buttons clicked, and unclicked



Community Poll Board

Techstack

Our features were added to the existing fakeStackOverflow codebase.

- Accessibility features were implemented by using custom **React and JavaScript** components. **ARIA** labels were utilized for screen-reader support. **Chakra UI** was utilized to create a new client UI.
- For Personalization, we added a **"Most upvoted"** sort option. The User object was modified to support personal sort preferences and **badge-related progress tracker**s were added to to the Profile Settings.
- The Answer object now includes a **helpful vote counter**.
- **Communities** were created by defining a new object and datatype to support community-related features.
- **Websockets** (socket.io) were used to implement **real-time polls** for communities members to engage in.
- Our **CI/CD pipeline** runs an automated test suite on both the frontend and backend components, and then deploys the site using **Render**.

Future work

There are several areas we plan to expand in future iterations to enhance user engagement, community management, and information accessibility.

Prestige Badges

We plan to expand the badge system with prestige tiers—e.g., starting with 5 upvotes and progressing through higher milestones. This encourages continued engagement and gives users more to show off on their profiles.

Moderator Tools

Future updates could give moderators the ability to pin posts, remove content, and manage members within communities—features aimed at improving safety and relevance.

Helpful Answer Sorting

To streamline the experience for new users, we'd like to add a sort option that surfaces the most helpful answers first on question threads.