CS4530 Final Project: "Syntax Error"

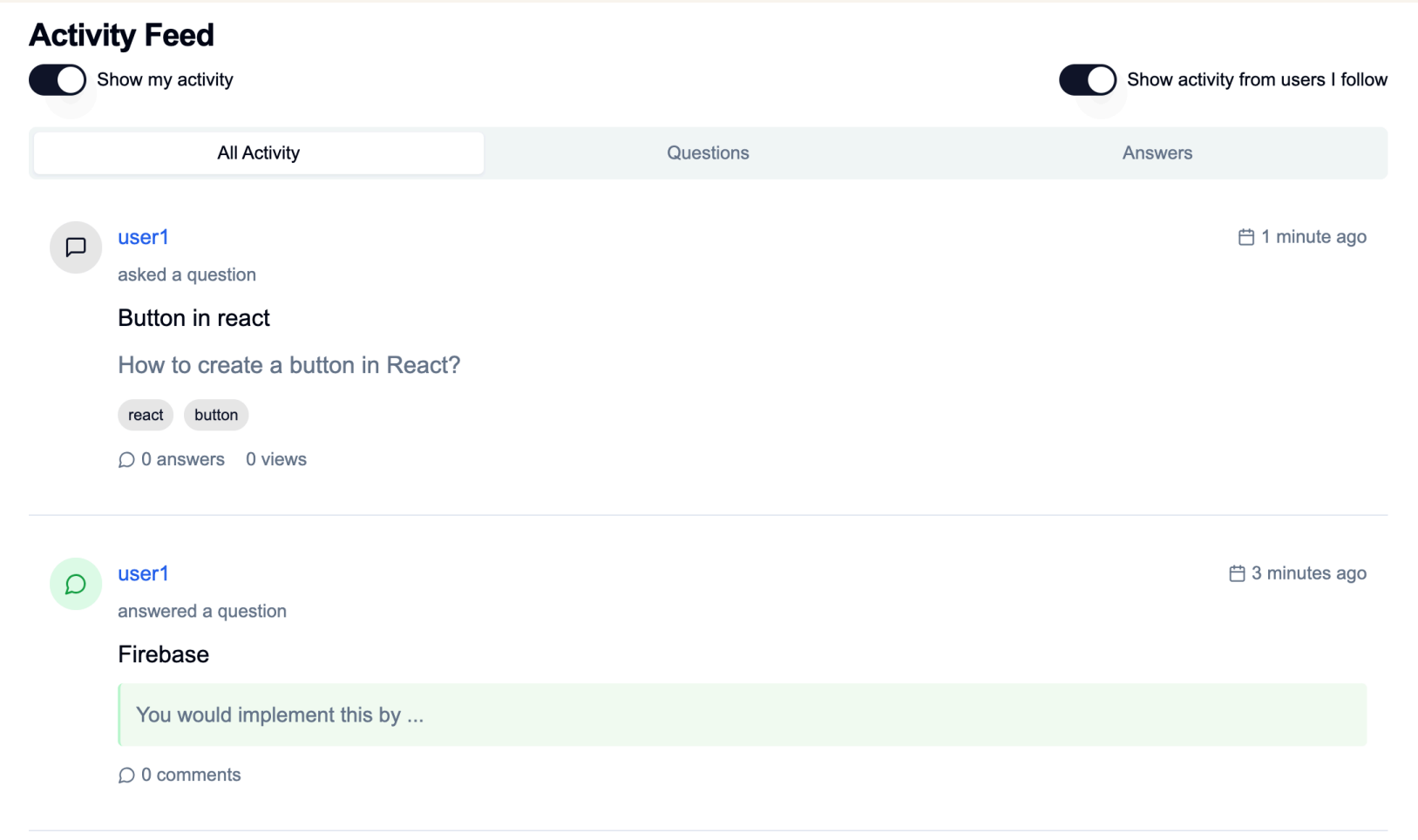**Group 211: Chirag Chadha, Preethi Gandluru, Aaryan Sinha, Arhat Shah**

Description

The original version of the application struggles with maintaining content quality and engagement due to disconnected user experiences and a lack of community features. Users can post duplicate questions, provide low-quality responses, and have no way to build a reputation or track their contributions over time. The platform lacks mechanisms to recognize valuable contributors and maintain content standards.
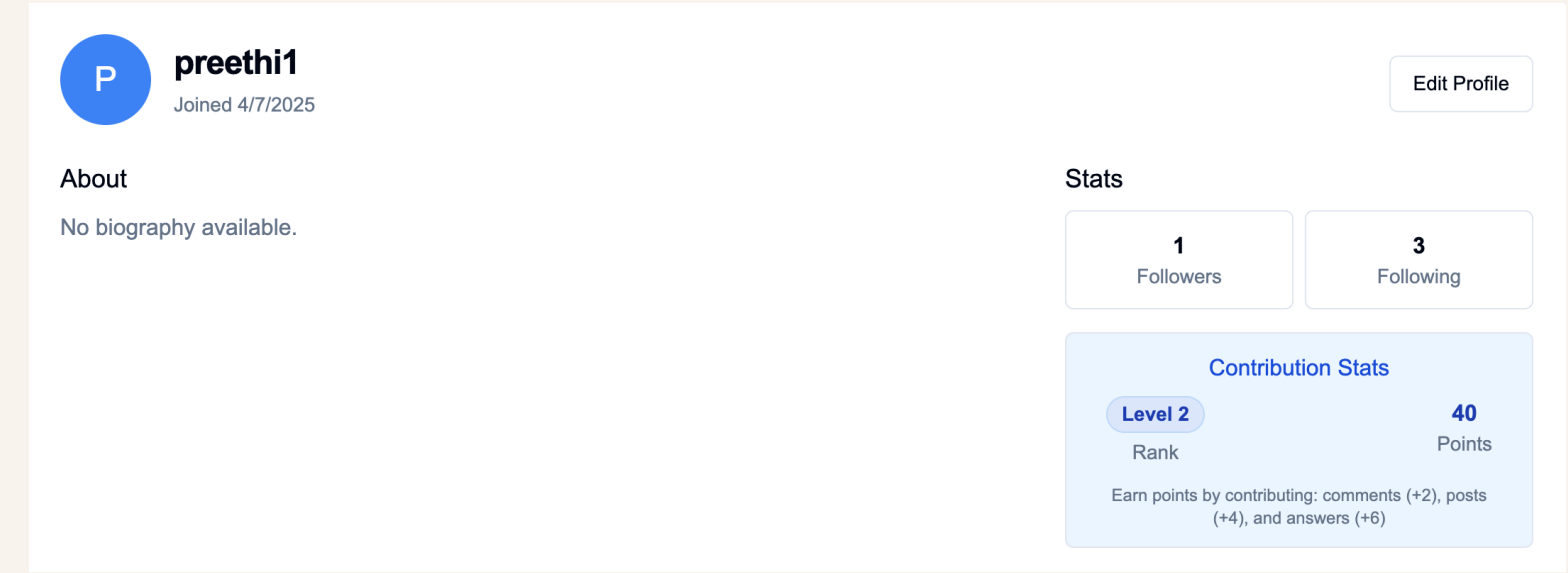
We developed Syntax Error which enhances the platform by introducing features that promote quality content and community engagement. By implementing a secure authentication system, profile visibility controls, achievement tracking, and activity monitoring, we will create an environment where users can build reputation through meaningful contributions while maintaining high content standards. These improvements will help create a more collaborative and efficient knowledge-sharing community where quality content is easily discoverable and valuable contributors are recognized.

Future Work

Looking ahead, there are several directions to expand and improve this project. An advanced analytics dashboard could provide users with more insights into their contribution patterns, impact, and growth areas. To create a more personalized user experience, we could implement a content recommendation feature that suggests questions to answer based on each user's expertise and past contributions. Additionally, allowing users to reconfigure their dashboard to their standards, especially visually would also create a more personalized user experience. These new features would overall improve the existing user experience.

This is the new activity feed page that allows users to see their followings activity and has the ability to filter the feed as well.

This the profile page where you can see rank, followers, and following
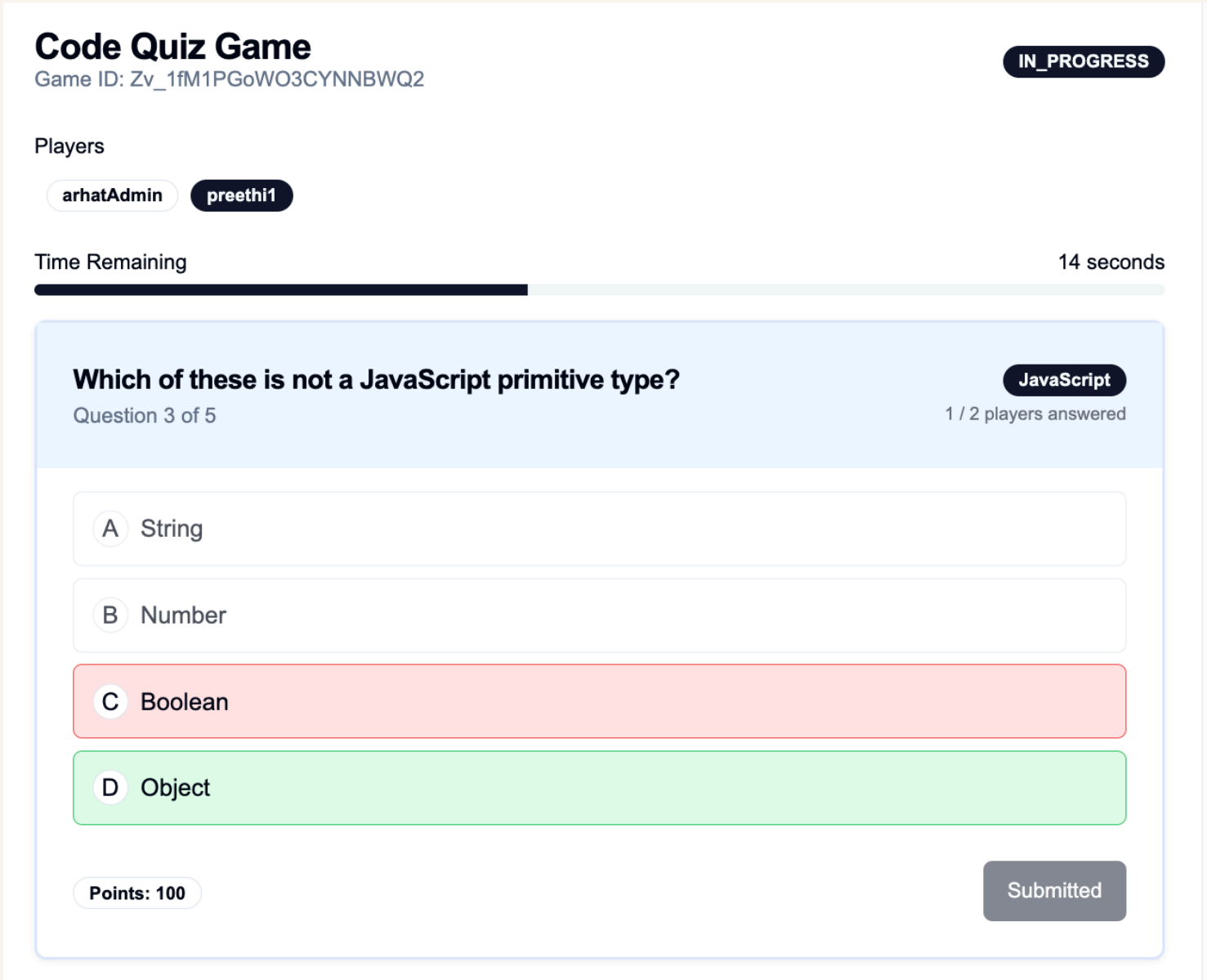
Technology Stack & Design Decisions

We implemented Syntax Error by building upon the existing platform. Our updated UI is styled with Tailwind for a better responsive design and theme support.
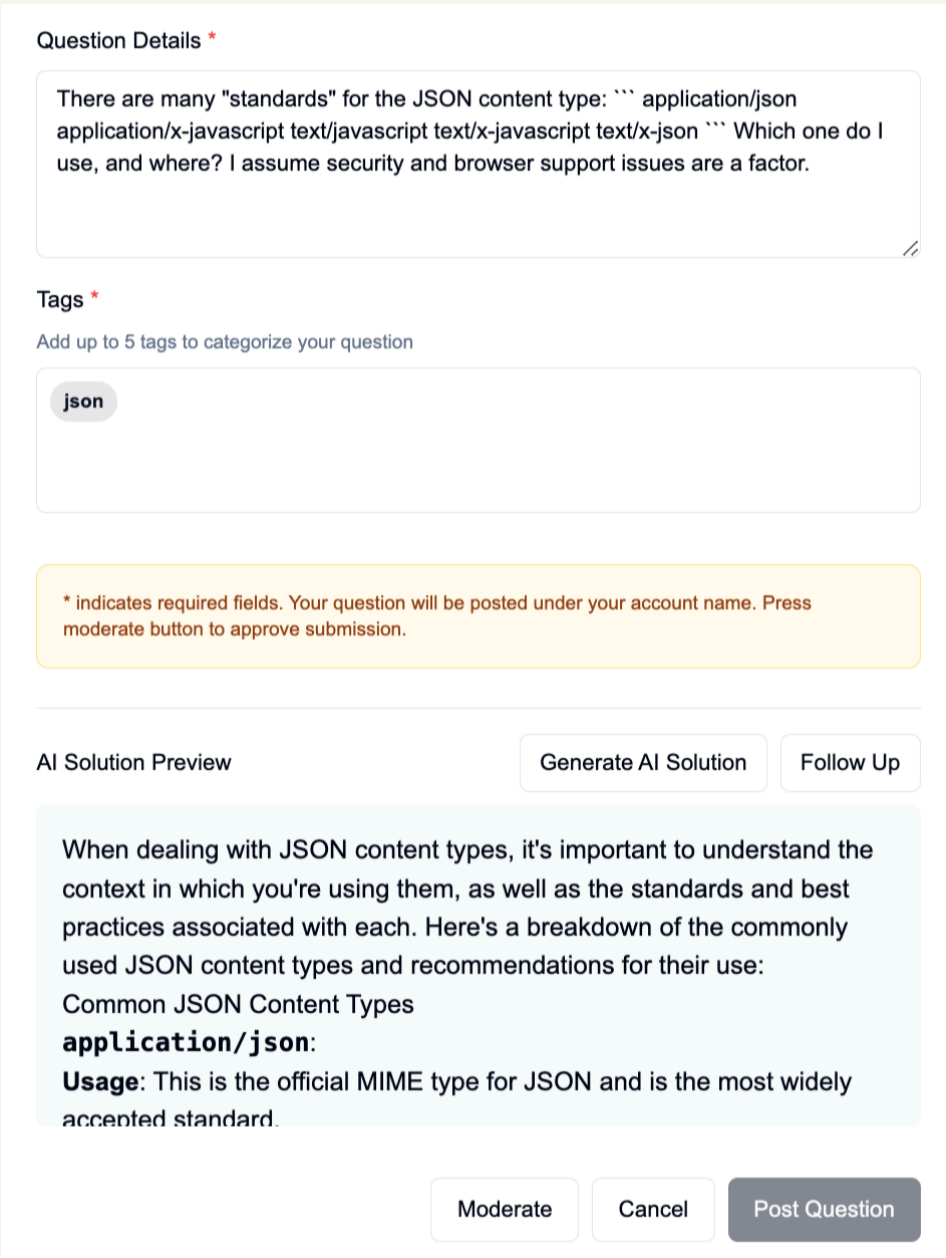
To increase security we implemented an authentication system which is built using Firebase, providing secure Google sign-in with two-factor authentication. User data is also protected with AES-256 encryption.

User profiles and social features are managed through a MongoDB database, tracking user relationships, contributions, and reputation scores. Real-time features like the interactive quiz game and notifications are implemented using Socket.IO, enabling instant updates across clients.

The AI integration leverages multiple LLM models through their respective APIs, with a backend system that handles context sharing between models when users switch between them. Content moderation uses a hybrid approach combining AI suggestion and human review through an admin dashboard.

This is the new quiz game that users can invite players to. The game has a timer and tells the user the right and wrong answer.

This shows the AI feature which allows you to ask a question and generate an AI solution as well as ask follow ups.

Demo: **https://se.chirag.nyc/**
Repo: **https://github.com/neu-cs4530/spring25-team-project-spring25-project-group-211**