Final Term Project Report

Group Name: Team Q

Members: Purani Daivik Manishkumar

Link to Github repository:
https://github.com/sfsu-csc-667-fall-2024-roberts/term-project-team-q
Link to Github project board:
https://github.com/orgs/sfsu-csc-667-fall-2024-roberts/projects/11/views/1

A brief description of what we accomplished in the term project:

In this project, I developed a real-time, multiplayer Bingo game application with the following key accomplishments:

1. **Authentication System**:
   - Implemented secure user registration and login with encrypted password storage using bcrypt.
   - Integrated session management using `express-session` with PostgreSQL storage via `connect-pg-simple`.
2. **Scalable Backend Architecture**:
   - Designed and implemented a backend using Node.js, TypeScript, and Express.
   - Structured a normalized PostgreSQL database schema to manage users, games, players, bingo cards, and chats efficiently.
   - Supported real-time gameplay and chat functionality using Socket.IO.
3. **Dynamic Gameplay Management**:
   - Enabled users to host and join multiple games.
   - Maintained player-specific game states, including their unique bingo cards and progress tracking.
   - Ensured players who leave and rejoin retain their previous game state.
4. **Real-Time Communication**:
   - Built a real-time chat system for players within games and in lobby
   - Synced game state updates in real-time for all players, ensuring consistent experiences.