QUIZZO: A Fun Multiplayer Quizzing Platform

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1. Purpose of the Service (Motivation)

QUIZZO is a multiplayer quiz platform designed to provide an engaging and interactive learning experience. The motivation behind this project is to enable users to participate in quiz games in real-time, competing with other players over a network. By incorporating a structured quiz format, the game enhances knowledge retention while keeping the experience enjoyable. The project takes inspiration from classic quiz games but adds a competitive element through real-time interaction, score tracking, and a seamless multiplayer experience.

2. Design and Implementation

Method of Sharing Data on the Server

The QUIZZO server is built using **TCP socket programming** to facilitate reliable communication between the server and multiple clients. The system follows a **client-server model**, ensuring synchronized gameplay. Key components include:

- **Multi-threaded server:** The server efficiently manages multiple clients using threads, allowing seamless interactions.
- **Real-time data exchange:** The server broadcasts quiz questions and player responses to all connected clients.
- **Answer validation and scoring:** The server verifies answers and updates the players' scores dynamically.
- **Fair gameplay mechanics:** The system ensures both players answer before proceeding to the next question.

By implementing these core functionalities, QUIZZO ensures a smooth and engaging gameplay experience for all participants.

Procedure for Compiling and Running

Server Setup:

1. Compile the server code:
   ```
   gcc server.c -o server -pthread
   ```
2. Run the server, specifying a port:
   ```
   ./server <port>
   ```

Client Setup:

1. Compile the client code: gcc client.c -o client -pthread
2. Run the client, specifying the server's IP and port:
   ./client <server_ip> <port>
3. Once two players are connected, the game automatically begins, offering a seamless start to the quiz experience.

Demo Video

To demonstrate the functionality of QUIZZO, a recorded demo video walks through:

- Players connecting to the server and entering their names.
- Rolling dice to determine the category selection.
- Answering quiz questions in real time.
- The display of the final scoreboard and winner announcement.

The demo video highlights the ease of interaction and the real-time competitive aspect of the platform.

3. Points of Innovation and Impressions

Points of Innovation

✅ **Real-time Multiplayer Interaction** – Players compete simultaneously, enhancing engagement. ✅ **Dynamic Question Selection** – Players roll dice to pick categories, adding an element of randomness and excitement. ✅ **Threaded Server Design** – Efficiently handles multiple clients using **multithreading**, ensuring smooth gameplay. ✅ **Synchronized Question Flow** – Ensures fairness by allowing both players to respond before progressing. ✅ **Live Scoreboard Updates** – Players receive instant feedback on their performance, encouraging healthy competition.

Impressions

QUIZZO successfully delivers a fun and interactive quizzing experience in a multiplayer setting. The use of **sockets and multithreading** ensures efficient communication between clients and the server, while the competitive elements keep players engaged. The project effectively demonstrates robust implementation of real-time networking principles. Future improvements could include **a graphical interface, support for more players, a wider variety of question categories, and persistent score tracking through a database.**

Thank you for reviewing QUIZZO! We are excited to explore further enhancements and make the platform even better.