

# **ABSTRACT**

## **Quizwhiz**

The Advanced Quiz Program is a sophisticated Java-based application designed to deliver an engaging and time-bound quiz experience. By leveraging multi-threading and JDBC, the system ensures each quiz question is presented with a strict time limit, managed by a dedicated thread. This real-time feature enhances the interactive nature of the quiz, providing a fair and consistent experience for all users. The integration of a PostgreSQL database allows for efficient storage and retrieval of quiz data, including questions, user profiles, and scores, ensuring data persistence and scalability.

Key functionalities of the Advanced Quiz Program include multi-threading for managing timed questions and JDBC for robust database connectivity. Each quiz question is dynamically fetched from the PostgreSQL database, and a countdown timer is initiated by a separate thread. This thread synchronization guarantees smooth interaction between the timer and user input. Additionally, the use of PreparedStatements in JDBC ensures secure execution of database queries, preventing SQL injection attacks and maintaining data integrity. The program also features dynamic question management, allowing for seamless updates to the quiz content without altering the core application code.

The system's comprehensive score tracking and user performance analysis capabilities provide users with detailed feedback on their quiz attempts. Scores are recorded and updated in the database, enabling users to review their performance history, including correct and incorrect answers and the time taken for each question. This persistent data storage supports user login and progress tracking over time, making the Advanced Quiz Program a versatile tool for both educational and recreational purposes. The combination of multi-threading, JDBC, and PostgreSQL ensures a robust, scalable, and secure quiz application.

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