Quiz Master V1

Quizmo

Project Report by
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Modern Application Development – I

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About me

I am currently in Diploma level at IITM BS, pursuing in Data Science with a strong focus on programming and Data science. Coding has become a passion of mine, and I enjoy exploring various languages and frameworks to broaden my skills. Apart from my academic interests, I have a variety of hobbies, including playing chess, Cricket, and engaging in different logic-based games. During my free time, I find peace in listening to music and spending time in serene, quiet places, as it helps me recharge and stay focused.

Project Description

A multi-user platform for exam preparation and quiz management. The application supports two primary user roles:

1. **Administrator (Quiz Master):** Manages all platform content, including creating subjects/chapters, designing quizzes with MCQs, monitoring user performance, and resolving platform issues. Pre-registered with full control.
2. **Users (Students):** Register to browse quizzes by subject, attempt timed tests, view instant results, and track their progress through performance history.

The platform's key functionalities include user authentication, service management, request processing, advanced search options, and role-specific actions. It leverages **Flask** for backend development, **Bootstrap** for creating a responsive interface, and **SQLite** as the database for storing user and service information. The application is designed for local deployment and includes optional features such as API integrations, input validation, and enhanced UI responsiveness.
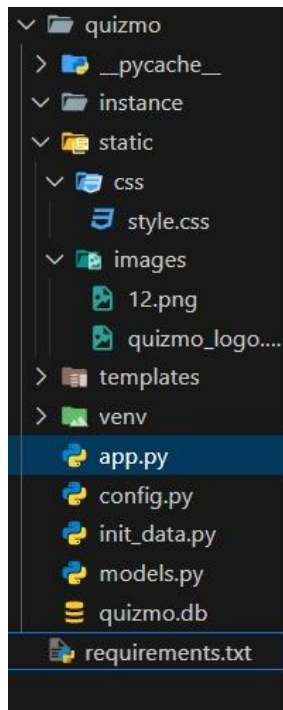
Development Process

To start, I thoroughly analyzed the project requirements and divided them into smaller, more manageable tasks. Drawing from online resources and prior experiences, I researched and implemented the required features step by step. I also studied documentation for technologies like **Flask** and **Flask-SQLAlchemy** to ensure efficient use of tools and frameworks during development. By following a systematic approach, I was able to align the application's design and functionality with the original project goals.

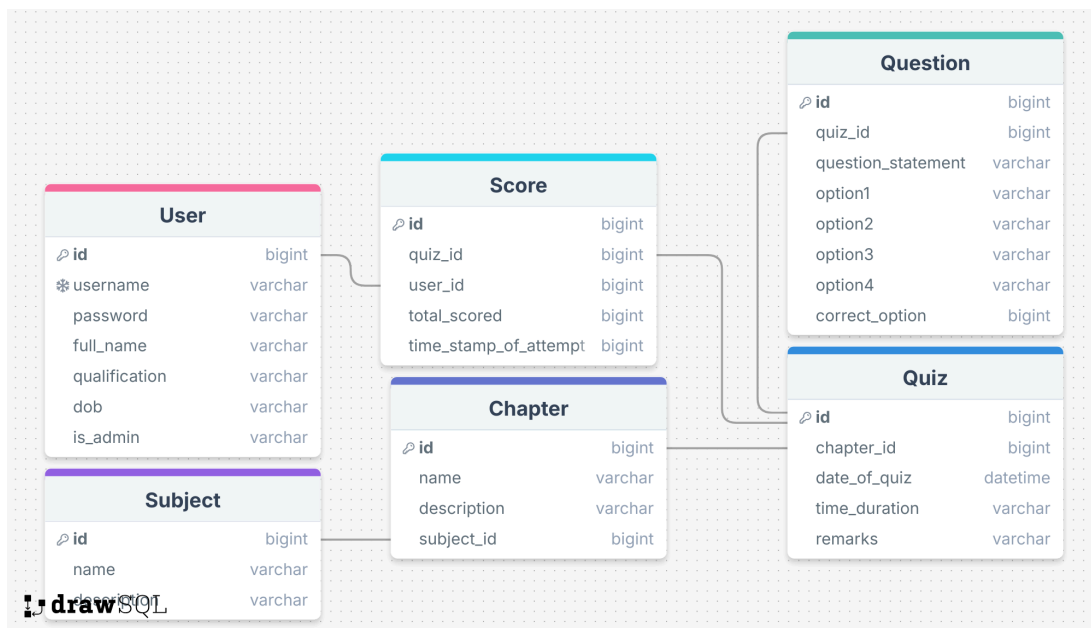## How I approached the project statement

I developed the Quiz Master application independently from scratch, starting with designing the SQL database schema and implementing it using SQLAlchemy models. Through self-learning and research, I gained the complete understanding needed to implement all project requirements. I implemented role-based access control using an is_admin flag to differentiate between administrators and regular users. To begin with, I created the necessary data models for users, subjects, chapters, quizzes, and questions. Online documentation and tutorials helped me grasp the core concepts and structure of the application. I then proceeded to build the Flask backend and frontend components based on this solid foundation.

File Structure:

Schema Design:

The database schema for Quiz Master is optimized to handle exam preparation data across two user roles (Admin and Student) while supporting quiz creation, attempts, and performance tracking. Below is the high-level schema structure:

Conclusion:

The database schema for **Quiz Master** is meticulously designed to support seamless exam preparation and quiz management across all user roles. By organizing data into structured tables—including **Users**, **Subjects**, **Chapters**, **Quizzes**, **Questions**, and **Scores**—the application guarantees data integrity, scalability, and maintainability. This schema forms the foundation for critical features such as role-based access control, dynamic quiz creation, timed test attempts, and performance analytics. With its logical relationships and optimized design, the schema ensures efficient administration for quiz masters and a smooth, intuitive learning experience for students, ultimately enhancing educational outcomes through technology.

Google Drive Link:

https://drive.google.com/file/d/1tMHW9bRhjZJlNgpv8hqxPLorq3xKgKNK/view?usp=drive_link