Project Report: QuizMaster

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I am a Data Science student at IIT Madras, batch of 2027, passionate about turning data into actionable insights. Proficient in Python, Java, and C, with expertise in TensorFlow, Scikit-learn, Pandas, and deep learning. I enjoy solving LeetCode problems to refine my algorithmic skills and problem-solving approach.

1. Project Statement:
It is a multi-user app (requires one admin and other users) that acts as an exam preparation site for multiple courses.

2. Approach and Execution:

Step 1: Listing Functionalities and Requirements
I meticulously outlined the key features and requirements:

Admin Management: Admin has complete control over the platform, including user management and quiz creation.

User Registration & Authentication: Users can register, log in, and manage their accounts.

Quiz Management: Admin can create subjects, add chapters, and include quiz questions under each chapter.

User Quiz Participation: Users can select subjects, attempt quizzes, and view their scores.

Data Security: Secure user authentication and role-based access.

Database Integrity: Ensuring all CRUD operations maintain consistency.

Step 2: Step-by-Step Development Process
I approached the project methodically, focusing on one functionality at a time:

User Authentication: Implemented user registration and login using Flask and SQLite.

Admin Dashboard: Created an exclusive dashboard for the quiz master to manage users and quizzes.

Quiz Setup: Admin can create subjects, chapters, and quizzes efficiently.

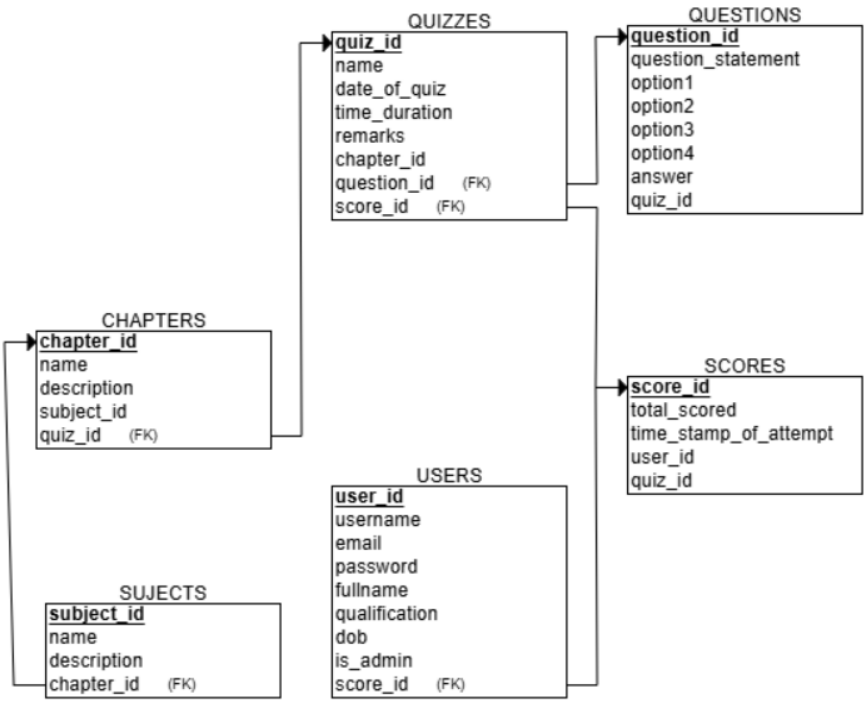
User Interface: Built dynamic pages using Jinja2 templating for a seamless user experience.

Quiz Functionality: Enabled users to attempt quizzes and receive scores instantly.

Performance Tracking: Users can track quiz performance via a scoring system.

API Development: Developed RESTful APIs for efficient data interaction.

3. Database Schema



4. API Endpoints (Controller)

The API endpoints, defined in `controllers.py`, facilitate CRUD operations. Key endpoints include:

- User Management: Register, Login, and Profile Management.
- Quiz Management: Create, Update, and Delete Quizzes.
- Question Handling: Add and Retrieve Questions.
- Score Tracking: Fetch User Scores and Quiz Performance.

5. Frameworks Used:

Backend: Flask (Python)

Frontend: Jinja2, HTML5, CSS, Bootstrap

Database: SQLite

Libraries: Flask-SQLAlchemy, Flask-RESTful, Matplotlib (for data visualization

6. Video link:

https://drive.google.com/file/d/1Ugx-WuqCiKHpBV9PR4rEtNDhB-rKgHD9/view?usp=drive_link