QUIZ MASTER APP

FINAL PROJECT REPORT

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About me : I am a student with a keen interest in web development with a strong foundation in **Python, Flask, and web technologies** and with an interest in **AI and data science**, I aim to create impactful digital solutions that enhance user experiences.

Description of Project :

This project is about a multi-user exam preparation website using Python, Flask, and SQLAlchemy. There is an admin to manage courses and users can take quizzes and analyze their scores. The platform ensures a smooth user experience with efficient database management. The aim is to create a reliable and user-friendly learning tool for students.

Technologies Used :

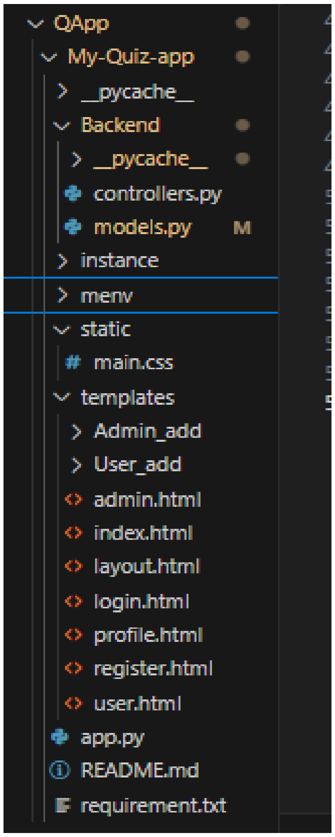
- **Flask**: A lightweight Python web framework used for building the backend of the application.
- **Flask-SQLAlchemy**: An ORM (Object Relational Mapper) for handling database operations efficiently.
- **SQLite**: A database management system used to store user data and quiz-related information.
- **Datetime**: A Python library used for handling date and time operations within the application.
- **Jinja2**: A templating engine used in Flask for rendering dynamic HTML content.
- **SQLAlchemy**: A database toolkit and ORM that helps in structuring and managing the database efficiently.
- **Blinker**: A Python library used for event handling and signaling within Flask applications.
- **Flask Session**: Used to handle user sessions and store temporary data.
- **Flask Flash**: Provides a messaging system for displaying notifications or feedback messages.
- **Werkzeug Security**: Used for hashing passwords and verifying user credentials for secure authentication.

Architecture :

The Quiz Master V1 project is structured in a simple and organized way to keep things easy to manage. It follows the MVC (Model-View-Controller) pattern using Flask as the backend framework and SQLAlchemy for handling the database.

Project Structure

- **Backend (Application Logic & Data Handling)**:
  - **Backend/ folder** contains the main logic.
  - **controllers.py** handles routes, user authentication, and quiz-related operations.
  - **models.py** defines the database structure, including users, subjects, chapters, quizzes, and MCQs.
- **Frontend (User Interface)**:
  - **templates/** folder contains HTML files (index.html, login.html, register.html, user.html, etc.), built using **Jinja2** templating.
  - **static/ folder** has **main.css** for styling.
- **Other Important Files**:
  - **app.py** is the main entry point of the project.
  - **requirement.txt** lists dependencies.



```
QApp
  My-Quiz-app
    __pycache__
    Backend
      __pycache__
      controllers.py
      models.py        M
    instance
    menv
    static
      main.css
    templates
      Admin_add
      User_add
      admin.html
      index.html
      layout.html
      login.html
      profile.html
      register.html
      user.html
    app.py
    README.md
    requirement.txt
```

Features :

The **Quiz Master V1** project is designed to provide a structured and user-friendly platform for conducting quizzes. It simplifies quiz management for admins while ensuring a smooth experience for users attempting quizzes.

Admin Features:

The admin dashboard allows admins to create, organize, and manage quizzes efficiently.

- **Subject and Chapter Management:** Admins can create, edit, and delete subjects and their respective chapters, ensuring a well-structured quiz organization.
- **Quiz Creation and Management:** Within each chapter, admins can add new quizzes, update existing ones, or remove quizzes.
- **Multiple-Choice Question (MCQ) Handling:** Admins can add MCQs with a single correct answer, making the quizzes structured and straightforward.
- **User and Quiz Tracking:** The system enables admins to monitor user activity, including attempted quizzes, quiz scores, and subject-wise performance.
- **Performance Insights:** A summary of user performance is available through charts and statistics, helping admins understand trends and engagement levels.

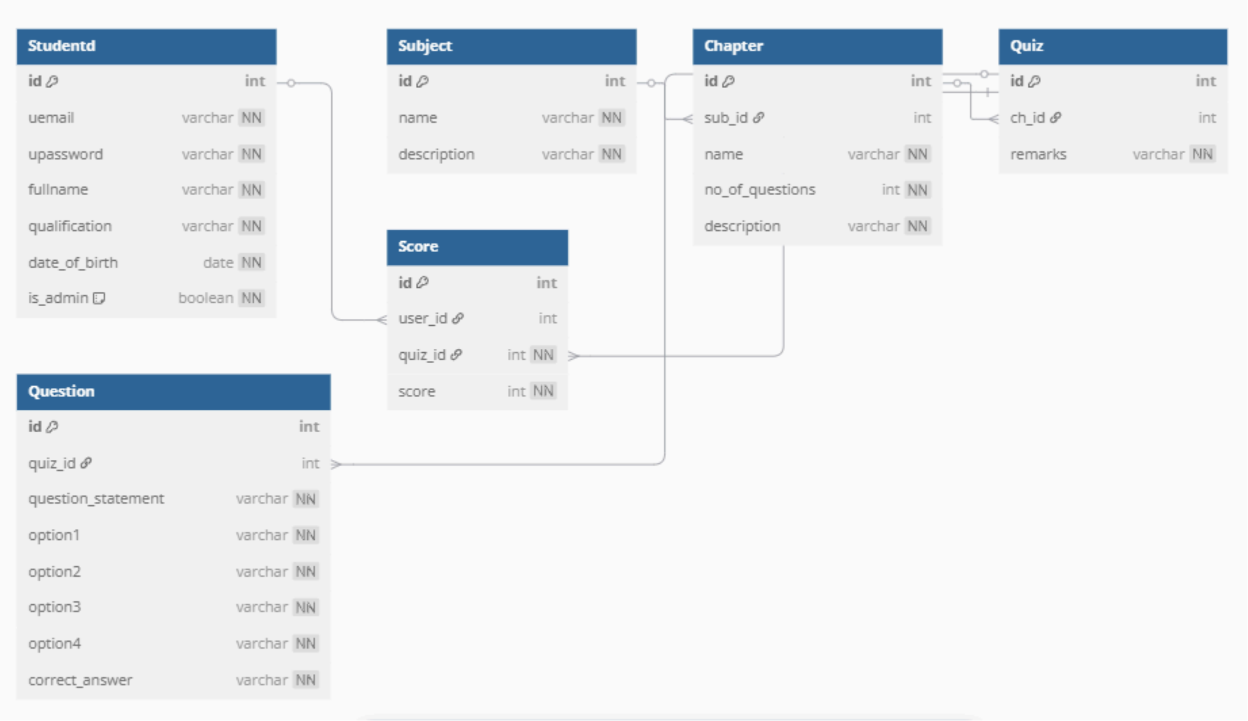
User Features:

The user dashboard is designed to be engaging and easy to navigate, allowing participants to take quizzes effortlessly.

- **User Authentication:** Users can register and log in to access their personalized dashboard.
- **Quiz Attempting:** Once logged in, users can search available quizzes and attempt them based on their interests.
- **Score Tracking:** Each quiz attempt is recorded, allowing users to view their past performances and track improvements.
- **Interactive Dashboard:** The dashboard provides a structured view of available quizzes, attempted quizzes, and performance summaries, making it easy to navigate and engage with the content.

DB Schema Design :

The **database schema** consists of 6 tables for user , subject, chapter , quiz , question and score follows a hierarchical approach, where subjects contain chapters, chapters have quizzes, and quizzes consist of multiple questions. The **Studentd** table manages users, distinguishing between administrators and students. The **Score** table tracks student performance, linking users to quizzes. **One-to-many relationships** maintain data integrity . This design makes the system **scalable, organized, and easy to use** for exam preparation.



Studentd		
id	int	
uemail	varchar	NN
upassword	varchar	NN
fullname	varchar	NN
qualification	varchar	NN
date_of_birth	date	NN
is_admin	boolean	NN

Subject		
id	int	
name	varchar	NN
description	varchar	NN

Chapter		
id	int	
sub_id	int	
name	varchar	NN
no_of_questions	int	NN
description	varchar	NN

Quiz		
id	int	
ch_id	int	
remarks	varchar	NN

Score		
id	int	
user_id	int	
quiz_id	int	NN
score	int	NN

Question		
id	int	
quiz_id	int	
question_statement	varchar	NN
option1	varchar	NN
option2	varchar	NN
option3	varchar	NN
option4	varchar	NN
correct_answer	varchar	NN

Video:

Demonstration of my project is in this drive
https://drive.google.com/file/d/1iR5i075GaMulEhTPYGK-29yKBKCWunuV/view?usp=sharing