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Description

In this project we have to create multi-user app (one requires an administrator and other users) that acts as an exam preparation site for multiple courses.

Technologies used

I have used the following technologies for creating this project: -

1. Flask - For creating the backend controller.
2. HTML/CSS - For creating the frontend view.
3. Flask SQL Alchemy - For creating the database model and querying data from the tables in controller.
4. Flask Login - For user session management.
5. Flask Werkzeug - For generating and verifying password hashes to securely store user passwords in the database.
6. SQLite - For database management.

DB Schema Design

https://drive.google.com/file/d/1Xvlh3W4JExlnHj9OCplu0xur2Q9x_PsL/view?usp=drive_link

Architecture and Features

Architecture

The Quiz Master application follows a Model-View-Controller (MVC) architecture for organized code structure. The project is organized as follows:

- **Controllers:** Located in the controller's folder, containing routes.py which handles all route definitions and request processing logic

- **Models:** Defined in models.py, containing SQLAlchemy database models for User, Subject, Chapter, Quiz, Question, and Score
- **Templates:** Stored in the template's directory, containing HTML files with Jinja2 templating for dynamic content rendering
- **Database:** SQLite database managed through Flask-SQLAlchemy, stored in the instance folder
- **Configuration:** Application settings defined in app.py and environment variables

Features

The Quiz Master application implements the following features:

1. **User Authentication System:**
 - Secure registration and login with password hashing via Werkzeug
 - Role-based access control (admin vs regular users)
 - Session management for persistent login state
2. **Admin Dashboard:**
 - Subject and chapter management (create, edit, delete)
 - Quiz creation and management with customizable parameters
 - Question bank management with multiple-choice options
 - User data management and performance tracking
3. **User Dashboard:**
 - Interactive quiz interface with timer functionality
 - Subject and chapter-based quiz organization
 - Real-time scoring
 - Performance history and statistics
4. **Responsive Design:**
 - Clean, minimal interface with consistent styling
 - Intuitive navigation and user experience

Video

https://drive.google.com/file/d/1V9qYPJSzncyFLd0MEaNHcAhBnIneNAP/view?usp=drive_link