

Project Report for Final Project Modern Application Development - I

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I am a college student with a strong passion for programming and data science. This project was a rewarding experience as I was able to apply the concepts I've learned to create something functional. Along the way, I faced several challenges, but overcoming them gave me a great sense of accomplishment. It was a valuable learning experience that allowed me to grow both technically and creatively

Description

In this project, we were tasked with creating a multi-user application called **Quiz Master V1**. The app serves as an exam preparation platform where the admin manages subjects, chapters, quizzes, and users, while users attempt quizzes to evaluate their knowledge. The app allows for user registration and login, where users can choose subjects, attempt quizzes, and track their scores. The admin has the ability to create, edit, and delete subjects, chapters, and quizzes, as well as manage user data. The user's quiz scores are tracked, and performance charts are available for both users and admins to view. The project also includes a secure login/signup page, where usernames and passwords of users are stored.

Technologies used

Flask: Used to build the web application's back-end.

Flask-SQLAlchemy: Flask extension used for managing database connections.

Flask-Login: Flask extension for user session management, handling login, logout, and remembering users.

SQLite: The database used to store users, subjects, chapters, quizzes, and scores.

Jinja2: Templating engine used for rendering dynamic HTML pages.

HTML, CSS, Bootstrap: Frontend technologies used for designing the UI and making the app responsive.

Datetime: Python module for time-stamping quiz attempts.

Security: Used to hash and securely store usernames and passwords.

Requests: Used for handling HTTP requests and responses.

DB Schema Design

User: Tracks user details (ID, username, password, etc.). One user can have many scores.

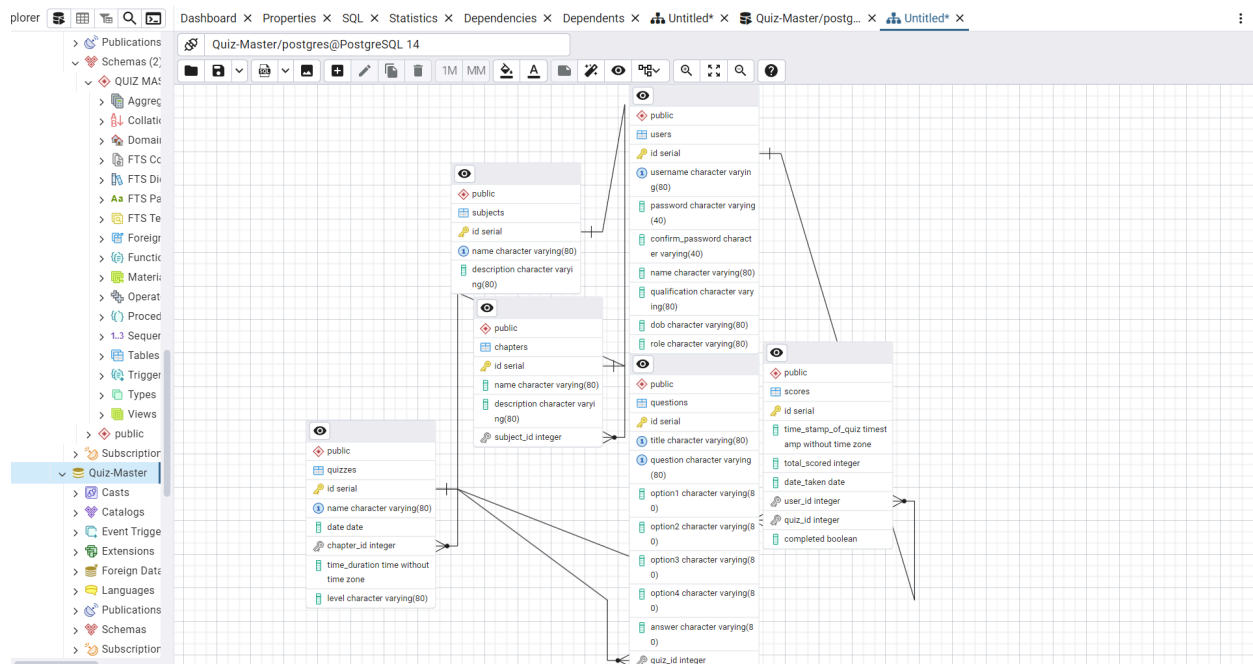
Subject: Represents various subjects in the quiz system. One subject can have many chapters.

Chapter: A chapter belongs to a subject and can have many quizzes.

Quiz: Contains quiz details (name, date, duration, etc.) and is linked to chapters. A quiz has many questions and scores.

Question: Holds individual questions for each quiz with options and correct answers.

Scores: Stores the user's score for each quiz attempt along with the timestamp and completion status.



Architecture and Features

The project code for the **Quiz Master** app is organized based on its functionality and utility in different files. The project is named **QuizMaster**.

Backend:

Built using the Flask framework, the backend consists of:

- **app.py:** Core routes and app initialization.
- **models.py:** Defines database models (User, Subject, Chapter, Quiz, Question, Scores) using Flask-SQLAlchemy.
- **Database:** SQLite for storing users, quizzes, questions, and scores in a relational structure.

Frontend:

Built with HTML, CSS, and Bootstrap, the frontend includes dynamic pages for user interactions:

- Landing Pages: index.html (login/registration), register.html, index.html.
- User Pages: user_dashboard.html, user_summary.html, scores_dashboard.htm.
- Admin Pages: admin_dashboard.html, admin_summary.html, admin_search.html.
- Quiz Management: add_quiz.html, edit_quiz.html, quiz_dashboard.html.
- Subject/Chapter Management: add_subject.html, edit_subject.html, add_chapter.html, edit_chapter.html.
- Quiz Interaction: start_quiz.html, view_quiz.html.

Routes:

- Authentication: / (login), /register, /logout.
- User Dashboard: /dashboard, /user_dashboard, /user_summary.
- Admin Dashboard: /admin_dashboard, /admin_summary, /admin_search.
- Subject Management: /add_subject, /edit_subject/<id>, /delete_subject/<id>.
- Chapter Management: /add_chapter, /edit_chapter/<subject_id>/<chapter_id>, /delete_chapter/<id>.
- Quiz Management: /quiz_dashboard, /add_quiz, /edit_quiz/<id>, /delete_quiz/<id>.
- Question Management: /add_question, /edit_question/<id>, /delete_question/<id>.
- Quiz Interaction: /view_quiz/<id>, /start_quiz/<id>.
- Score Management: /scores_dashboard.

Video

Link:

<https://drive.google.com/file/d/184NO9htjZ7qHSWtgECtZbbv-srRa5P9M/view?usp=sharing>