QUIZ MASTER-V2

Final Project Report

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AUTHOR

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About me - I am a data science student with skills in C, Python, Statistics, NumPy, Pandas, Matplotlib, Bokeh and Seaborn. Currently, I am expanding my expertise in machine learning with scikit-learn.

DESCRIPTION OF PROJECT

This is a quiz master web app which is useful for the organization to create quizzes and students can also use this web app to give the quiz and track the previous quizzes at one place. It will be useful to analyze the topic knowledge of the student, and the organization also tracks the maximum score in a particular subject and monthly quiz attempts details. Also the admin sends the reminder and monthly report to the users.
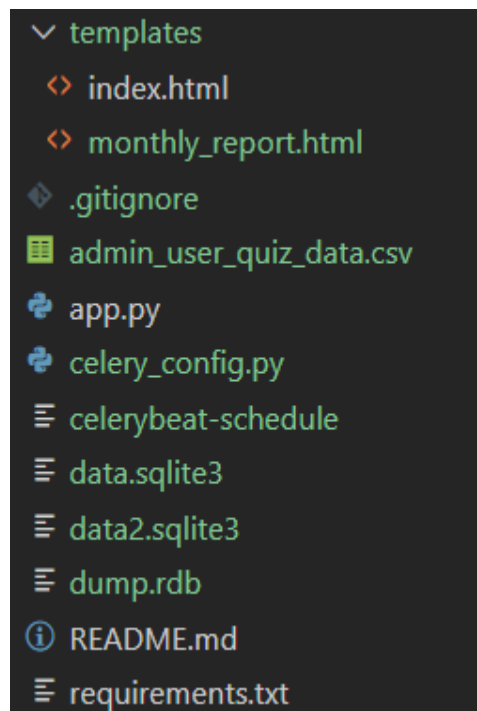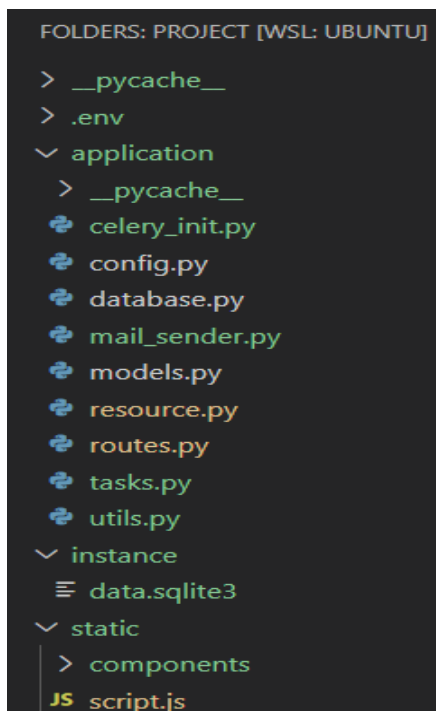
TECHNOLOGIES USED

- **Flask**: Backend framework and API building for the web application.
- **Python:** Backend code is written with the help of the python language.
- **SQLAlchemy**: Object-Relational Mapping tool for database interactions.
- **SQLite3**: Database management system for storing application data.
- **HTML/CSS/JavaScript**: Frontend technologies only for landing page user interface design and interactivity.
- **VueJS**: Used for User Interface (UI)
- **Redis/Celery**: For caching and batch job scheduling
- **Flask-Login**: Extension for managing user sessions and authentication.

ARCHITECTURE

Here, the app.py file contains the main code to run the webapp is a module which contains all the files for the app. The description of are as follows

- **Application:** contain all the backend code files
  - **routes.py,resource.py:** Contains API route definitions.
  - **models.py:** Defines database models using ORM
  - **tasks.py, celery_init.py:** Define & initialize backend tasks with Celery.
  - **mail_sender.py, utils.py:** Utility functions for sending emails.
  - **config.py, database.py:** Configuration settings and database setup.
- **instance/data.sqlite3:** SQLite database file storing application data.
- **templates:** HTML templates for rendering views.
- **Static:**
  - **components:** Reusable frontend components (Vue)
  - **script.js:** Custom JavaScript code for frontend behavior.
- **celery_config.py, celerybeat-schedule:** Celery and periodic task configuration.
- **requirements.txt:** Lists Python dependencies for the project.

FEATURES

User Features:
- **User Registration & Login** – Secure authentication for users.
- **Quiz Attempt Tracking** – Users can attempt quizzes and their scores are recorded.
- **Personalized Summary** – Users can view/download their quiz attempts and performance.

Subject & Quiz Management:
- **Multiple Subjects & Chapters** – Supports different subjects, each with multiple chapters.
- **Quiz Creation & Management** – Admin can create and manage quizzes for different chapters.
- **Question Bank** – Each quiz contains multiple-choice questions with correct answers stored.

Admin Dashboard Features:
- **Subject-Wise Top Scores** – A **bar chart** displaying the highest scores per subject.
- **Subject-Wise Quiz Attempts** – A **pie chart** showing the number of quiz attempts per subject.
- **User & Quiz Management** – Admins can manage the users, quizzes, and performance stats and also be able to download the report.

Backend Jobs:
- **Daily Reminders** – Application sends the daily reminders to the users on their
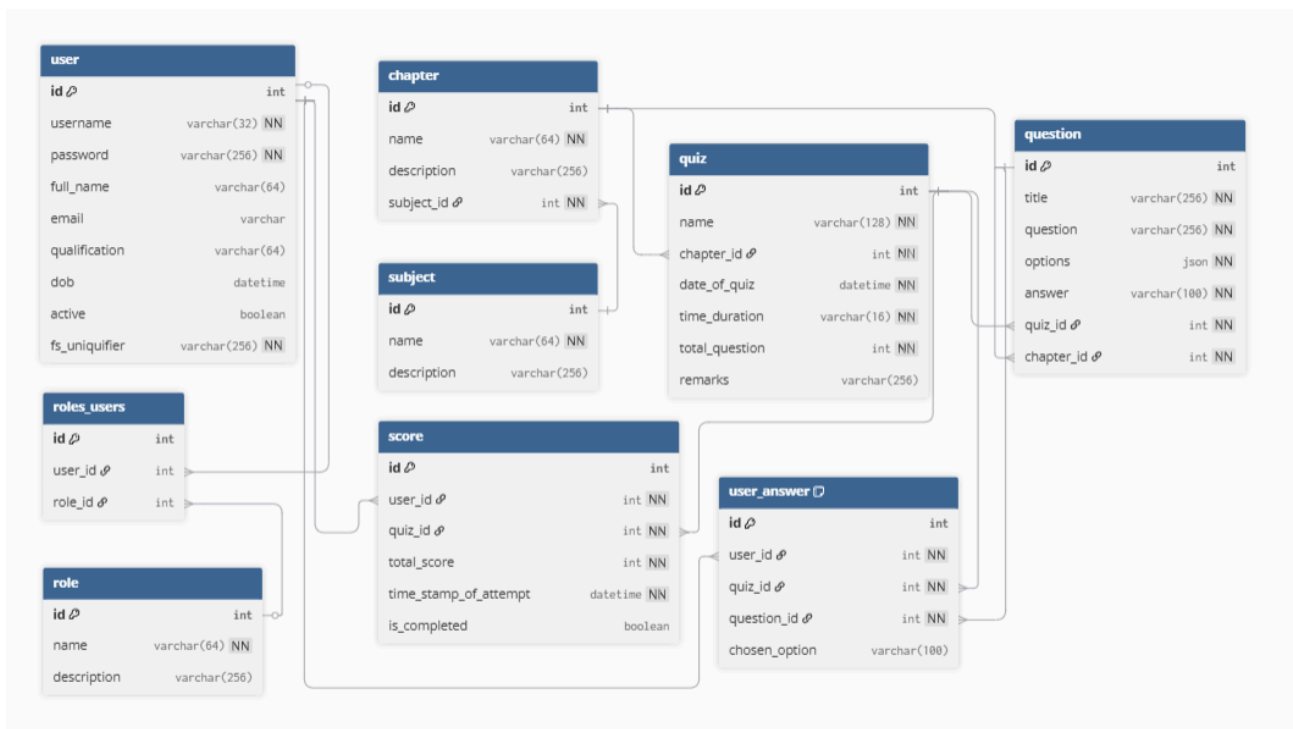
mail id.

- **Monthly Activity Report** – Application sends the monthly report to the users on the mail id.

Security & Performance:
- **Password Hashing** – User passwords are securely hashed before storage.
- **Role-Based Access** – Admins and regular users have different permissions.

DB SCHEMA DESIGN

The database schema consists of tables for users, subject, chapter, question, quiz, and score. Relationships are established between these tables to track user activities such as attempted quiz and quiz score. Each table contains relevant fields such as user details and information like subjects, chapters, questions, quizzes and score records.

VIDEO LINK

A video demonstration of my project is available here.

🎬 Project_demonstration.mp4

THANK YOU