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About Me: I am a Diploma Level Student in this program, and this is my last project. I have hands-on experience in full-stack web development, AI/ML projects, and database systems.

Description

This project is a **Quiz Management System** built for students and administrators. Admins can manage subjects, chapters, quizzes, questions, and users, while users can take quizzes, view results, and track progress.

AI/LLM Usage: **10% for Styling and debugging**, only used for documentation and code suggestions.

Technologies used

Frontend: Vue.js, Bootstrap

Backend: Flask (Python)

Database: SQLite

Flask Extensions: Flask-JWT-Extended (Authentication), Flask-CORS (Cross-Origin), Flask-SQLAlchemy (ORM), Flask-Security

Celery + Redis: For background task processing (CSV Export)

MailHog (Optional): For email testing

Purpose:

- Flask for lightweight backend API handling.
- Vue.js for building a responsive and modular frontend.
- Celery + Redis for asynchronous tasks like CSV report generation.
- SQLite for simplicity and quick integration.
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DB Schema Design

https://drive.google.com/file/d/137D81PQEtTLWSx-u3I2otllgcSPygt9b/view?usp=sharing

API Design

Authentication: Login, Register APIs using JWT

Admin APIs:

- /admin/subjects, /admin/chapters, /admin/quizzes, /admin/questions for CRUD
- /admin/users for managing and exporting users
- /admin/export-users-csv integrated with Celery for async processing

User APIs:

- /quizzes/:subject_id to list quizzes

- /quiz/:id/questions to fetch questions
- /quiz/:id/submit to submit answers

Architecture:
- **Backend (Flask):**
  - app.py – Main entry point, routes, JWT setup
  - models.py – SQLAlchemy models
  - tasks.py – Celery tasks for async operations
- **Frontend (Vue):**
  - components/ – Pages for Admin Dashboard, Quiz, Summary
  - router/index.js – Handles navigation and route guards

Features Implemented:
- JWT-based authentication
- Role-based access (Admin/User)
- Quiz scheduling and duration control
- Real-time countdown timer for quizzes
- Summary dashboard with charts
- Search functionality in Admin Dashboard
- CSV export for users via Celery + Redis
- Fully responsive UI using Bootstrap

Additional Features:
- Daily reminders and monthly reports (with Mail integration)
- Highlighted search results
- Async background task handling

Video

https://drive.google.com/file/d/1_zHb8leq6cvq6ObTc63RD8wyhw0ANMRj/view?usp=sharing