

QuizMaster – Project Report

Overview

QuizNexus is a web-based quiz management platform tailored for educational use. It supports creating, managing, and taking quizzes with real-time analytics and strict role-based access control for both administrators and students.

Technology Used

Frontend (Vue.js 3)

- Vue 3 (Composition API), Vuex 4, Vue Router 4
- Bootstrap 5 for responsive UI
- Chart.js for data visualization
- Axios for API communication

Backend (Flask)

- Flask + Flask-RESTful API
- Flask-JWT-Extended for authentication
- SQLAlchemy ORM + SQLite
- Redis for caching, Celery for background tasks
- Werkzeug for secure password hashing
- MailHog for SMTP email testing

API Highlights

- **Auth:** `/api/login`, `/api/register`, `/api/logout`, `/api/check_token_valid`
- **Admin:** `/api/subjects`, `/api/quizzes`, `/api/questions`, `/api/admin/users`
- **User:** `/api/dashboard`, `/api/fetchQuestions`, `/api/takeResponse`, `/api/scoreboard`

Architecture

Frontend

- Built with Vue.js
- Handles UI, routing, state, and role-based rendering
- Communicates with backend via secure REST APIs

Backend

- Built with Flask
- Manages authentication, business logic, and APIs
- Handles background tasks with Celery
- Uses Redis for performance and caching

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Database

- SQLAlchemy ORM with SQLite
- Stores users, quizzes, questions, responses, and scores
- Supports hierarchical structure for subjects and chapters

Development

```
git clone https://github.com/21f3002473/QuizNexus.git && cd QuizNexus
```

```
cd backend && python3 -m venv .venv && source .venv/bin/activate
```

```
pip install -r requirements.txt && python app.py
```

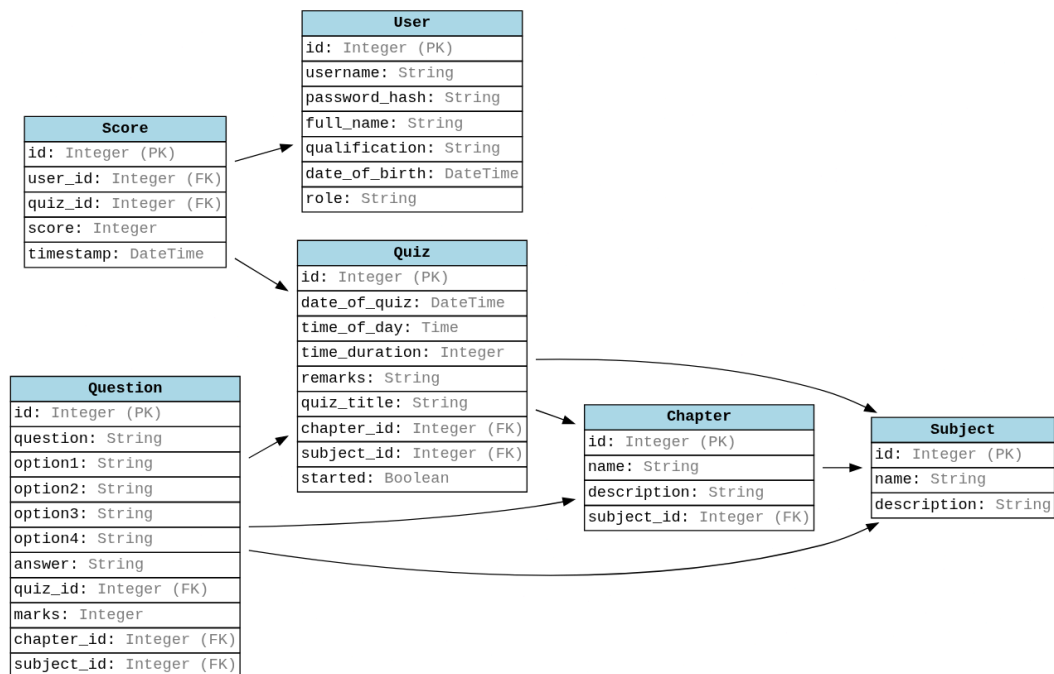
```
cd ../frontend && npm install && npm run serve
```

```
sudo apt install redis && redis-server
```

```
cd backend && celery -A app.celery worker worker --beat  
--loglevel=info
```

Mailhog

DB SCHEMA DESIGN



Video Link:

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