Deon Levon Dmello
Roll Number: 21f3002473
Mail: 21f3002473@ds.study.iitm.ac.in

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

Deon Levon Dmello
Roll Number: 21f3002473
Mail: 21f3002473@ds.study.iitm.ac.in

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
```
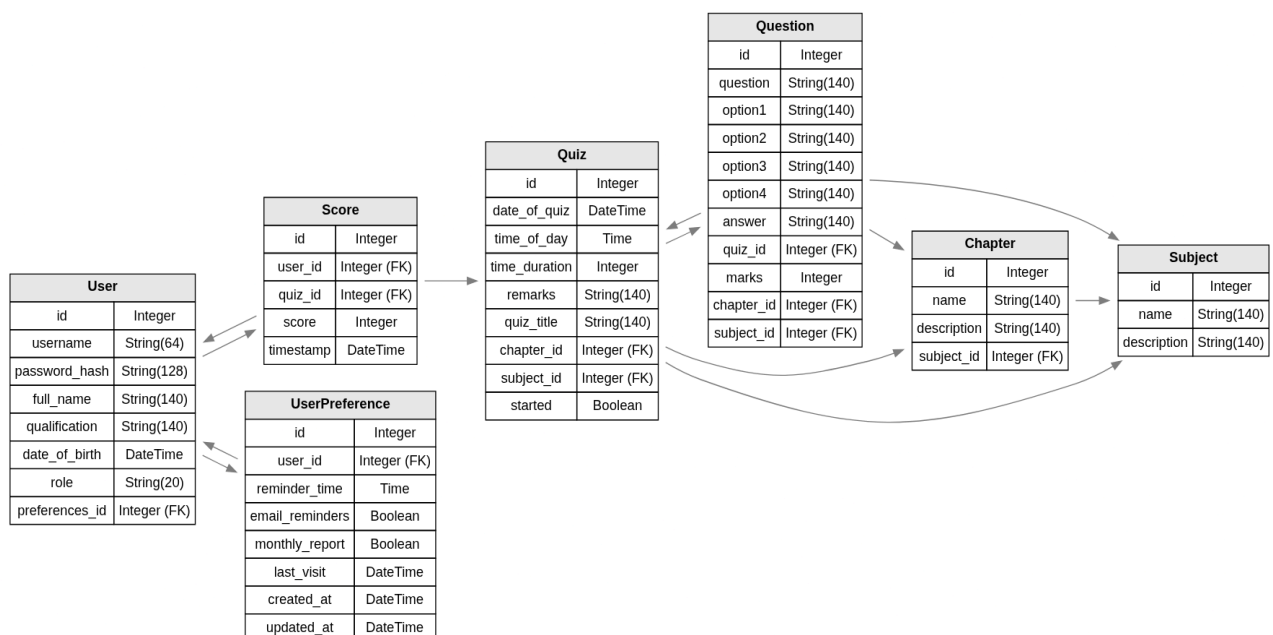
DB SCHEMA DESIGN

Question	
id	Integer
question	String(140)
option1	String(140)
option2	String(140)
option3	String(140)
option4	String(140)
answer	String(140)
quiz_id	Integer (FK)
marks	Integer
chapter_id	Integer (FK)
subject_id	Integer (FK)

Quiz	
id	Integer
date_of_quiz	DateTime
time_of_day	Time
time_duration	Integer
remarks	String(140)
quiz_title	String(140)
chapter_id	Integer (FK)
subject_id	Integer (FK)
started	Boolean

Score	
id	Integer
user_id	Integer (FK)
quiz_id	Integer (FK)
score	Integer
timestamp	DateTime

User	
id	Integer
username	String(64)
password_hash	String(128)
full_name	String(140)
qualification	String(140)
date_of_birth	DateTime
role	String(20)
preferences_id	Integer (FK)

UserPreference	
id	Integer
user_id	Integer (FK)
reminder_time	Time
email_reminders	Boolean
monthly_report	Boolean
last_visit	DateTime
created_at	DateTime
updated_at	DateTime

Chapter	
id	Integer
name	String(140)
description	String(140)
subject_id	Integer (FK)

Subject	
id	Integer
name	String(140)
description	String(140)

Video Link: