

Author

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I am currently a student at diploma level and also pursuing B-tech 2nd year in CSE at Parala maharaja engineering college.

Description

It is a Quiz web application focusing on using Flask as Backend framework for the application. The idea is to provide a educational platform to Students and teacher with user friendly interface.

Technologies used

1. Flask: for rendering templates, defining routes and handle request to the application
2. Flask SQLAlchemy : for defining Models, query operation database
3. Jinja: for templating HTML documents
4. Sqlite: it is for database and it's tables
5. werkzeug: for password hashing

DB Schema Design

All the classes have an id field as the primary key.

1. **User class**
 - a. id: user id, integer, primary key
 - b. username: string, unique, cannot have null value
 - c. passhash: string, cannot have null value
 - d. full_name: string, cannot have null value
 - e. qualification: string, cannot have null value
 - f. dob: date, cannot have null value
 - g. is_admin: boolean, default False
2. **Subjects class**
 - a. id: subject id, integer, primary key
 - b. name: subject name, string, unique, cannot have null value
 - c. Relationship defined with Chapters class
3. **Chapters class** (one to many relationship with Subjects)
 - a. id: chapter id, integer, primary key
 - b. name: chapter name, string, cannot have null value
 - c. subject_id: foreign key is id (subject id in the subjects table)
 - d. Relationship defined with Quizes class
4. **Quizes class** (one to many relationship with Chapters)

- a. id: quiz id, integer, primary key
 - b. chapter_id: foreign key is id (chapter id in the chapters table)
 - c. date_of_quiz: datetime, cannot have null value
 - d. duration: integer, cannot have null value (in minutes)
 - e. Relationships defined with Questions and Scores classes
5. **Questions class** (one to many relationship with Quizes)
- a. id: question id, integer, primary key
 - b. quiz_id: foreign key is id (quiz id in the quizzes table)
 - c. question_title: string, cannot have null value
 - d. question_statement: string, cannot have null value
 - e. option1: string, cannot have null value
 - f. option2: string, cannot have null value
 - g. option3: string, cannot have null value
 - h. option4: string, cannot have null value
 - i. correct_answer: string, cannot have null value
 - j. marks: integer, cannot have null value
6. **Scores class** (many to one relationship with both Users and Quizes)
- a. id: score id, integer, primary key
 - b. quiz_id: foreign key is id (quiz id in the quizzes table)
 - c. user_id: foreign key is id (user id in the users table)
 - d. score: integer, cannot have null value
 - e. question_attempted: integer, cannot have null value
 - f. correct_count: integer, cannot have null value
 - g. time_stamp_of_attempt: datetime, default current time, cannot have null value
 - h. is_completed: boolean, default False, cannot have null value

Architecture and Features

Architecture

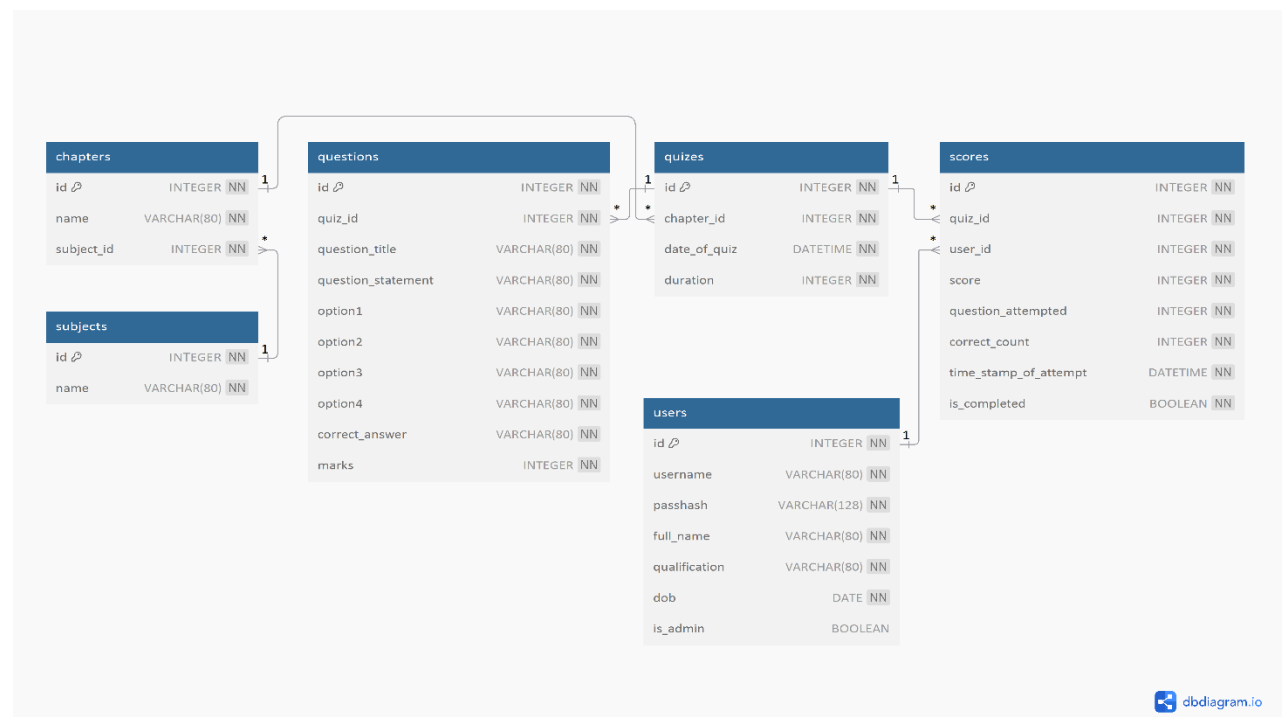
1. The "models.py" containing the database schema is separated from "routes.py" which contains all the route definitions
2. Templates folder organizes HTML files by user type (admin/user)
3. Static folder contains CSS stylesheets and generated charts
4. The "instance" folder contains the SQLite database
5. App configuration is managed in "app.py"
6. "Config.py" for managing different environments and configure application settings

Features

1. **User Authentication System**
 - a. Role-based access with admin and regular user roles
 - b. User registration and Secure login with password hashing
2. **Admin Interface:** Dashboard with Subject, Chapter and Quiz (add, edit, delete) with Performance summary visualization
3. **User Interface:**
 - a. View upcoming quizzes ordered by date
 - b. Search for quizzes by subject, chapter

- c. Take timed quizzes with auto-submission with performance analytics
- 4. **Quiz System**
 - a. Scheduled availability based on date
 - b. Timed quiz attempts and Score calculation based on correct answers
- 5. **Search Functionality**
 - a. Admin: Search by subjects, chapters, and quizzes and questions
 - b. quiz-specific search for quizzes by subjects, chapters
- 6. **Performance Visualization**
 - a. Admin and user specific performance plots

ER Diagram



Video

https://drive.google.com/file/d/16UQxEw9A1izzGYbqg_PCc8SZtGJvgGsc/view?usp=sharing