

## **Author**

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I am currently at diploma level and also pursuing B.Tech in Mechanical Engineering from Delhi Technological University (2nd Year).

## **Description**

According to me, the project requires me to create an app where the admin can make new subjects, new chapters for each subject and for each chapter he can add quizzes and questions to the quizzes. The users will login and attempt the quizzes and check their scores.

## **DB Schema Design**

My database contains of 7 tables:

1. Users table: It contains the details of the users(Admin being the first one user\_id=1) such as user\_id(primary key), email id(user name), full name, password, Qualification and Date of Birth and a relationship with the response table.
2. Subject table: It contains the subjects created by the admin. Subject ID(primary key), Subject name, Student ID(foreign key from the users table) and relationships with the chapter and quiz tables.
3. Chapter table: It contains the details of the chapters created by the admin such as Chapter ID(primary key), Chapter name, subject ID(foreign key from subject table) and relationships with quiz and subject tables.
4. Quiz table: It contains the details of the quizzes made by the Admin such as Quiz ID(primary key), Quiz name, Subject ID(foreign key from subject table), Chapter ID(foreign key from chapter table), Quiz date Quiz Time(duration) and it has relationships with subject, chapter, question and response table.
5. Question table: It contains the details about the quizzes made by the admin such as Question ID(primary key), Question statement, Quiz ID(foreign key from the quiz table), 4 options for the quiz and the correct option and finally the relationships quiz and response table.
6. Response table: It contains the details about the responses submitted by the users(students) for each question while performing the quiz. It has Response ID(primary key), User ID(foreign key from user table), Quiz ID(foreign key from quiz table), Question ID(foreign key from question table), Selected Option(the option selected by the student) and relationships with user, quiz and question table.
7. Score table: It contains the details of the marks scored by the users in each quiz. It has Score ID(primary key), User ID(foreign key from user table), User name(foreign key from user table), Quiz ID(foreign key from quiz table), Quiz name(foreign key from quiz table),

Subject name(foreign key from subject table), Chapter name(foreign key from chapter table), Score(marks of student), Number of questions(in quiz), Attempt date and time.

## **Frameworks and libraries**

For my app, I have used Flask, Flask\_sqlalchemy as an ORM, flask\_migrate for migration purpose, werkzeug.security for authentication and password hashing purpose, datetime library for the date and time management, json for response sending and receiving and pdb library for debugging purpose.

## **Architecture and Features**

In my project folder, there is an app.py file which is the main flask app, an extensions.py file which contains my database creation script and a create\_admin\_before\_running\_app.py file which creates the admin as the first user and a readme file. there are 3 major directories apart from python files:

1. Models: It contains all the 7 models, basically the tables for the database.
2. Controllers: It contains 3 controllers; Admin controller to control all the functionality of the admin, User controller to control all the functionality of the users(students) and an Authentication controller to control the login and registration process.
3. Templates folder: It has the template of login page and registration page and the following folders:
  - a. Admin: It has templates for admin such as Dashboard which shows the list of subjects and chapters, Quiz dashboard that shows the quizzes along with subject and chapter names and number of questions, pages for quiz creation, chapter creation, subject creation and question creation. Pages for editing chapters and questions, page for viewing questions and at last the summary page.
  - b. User: It has templates for students such as Dashboard to show available questions, viewing quiz, attempting quiz, checking scores and at last summary.
  - c. Base: It controls the base and base\_dashboard templates which are extended across the user and admin templates.

## **Implementation:**

### ☐ Login:

- It is the page for logging in, it's the same for both admin and student, the admin is by default created first (create\_admin\_before\_running\_app.py) so it gets user\_id=1.
- It has a link to the registration page for new users to be registered.

### ☐ Registration:

- It is the page for registration of students, it has the fields; Full name, Email, password, qualification and Date of birth.
- It also has a link to the login page.

### ☐ Admin:

- Firstly there is a navigation bar which has the buttons to go to the Home page(dashboard), summary page, quizzes page and a button to logout. On the right side there is the Welcome phrase.
- Then we have a dashboard which will show the admin all the subjects that are there and in each subject the chapters available for that subject and buttons to add chapters to the subject and delete the subject, for editing and deleting the chapters and a floating button on the page to add subjects.
- Then there is a quiz page, it shows all the quizzes, along with the chapter and subject name to which it belongs to and also the date and time duration of the quiz and number of questions in the quiz. It has a floating button on the page to add new quizzes and each quiz has buttons to delete the quiz, add questions to the quiz and view the questions.
- Then we have the summary page which displays some charts to tell the subject wise top scores and to tell the total number of quiz attempts done by the students(every single attempt will be counted irrespective of whether the same quiz is attempted multiple times or different).
- Then we have the question adding page, it contains the subject and chapter name (both prefilled depending on which quiz was selected to add a question), a column for adding question statements, 4 options and the correct option. The view questions page will display all the questions in that particular quiz (Question ID and Question Statement) and buttons to edit those questions and delete the question.
- The new quiz page has options to select the subject and then the chapter of that particular subject, the name of the quiz, date and duration for the quiz.

#### ☐ User:

- Firstly there is a navigation bar which has a home button to redirect to the user dashboard, a score button to go to the scores page, a summary button to go to the summary page and a logout button, on the right side we have the welcome phrase with the user's name.
- Then we have a dashboard, which will display all the available quizzes to the user along with the number of questions in the quiz, date and duration of each quiz, status which shows whether the quiz is attempted or not and columns for showing the date and time of the last attempt of that quiz. Each quiz also has buttons to view the quiz and to start the quiz. On top we also have two filtering options to filter quizzes based on subjects and based on chapters of that subject.
- The view quiz page shows the quiz name, quiz ID, the name of the subject and chapter to which the quiz belongs to, number of questions in the quiz and the date and duration of the quiz.
- When a student starts a particular quiz, he will see the timer, question number, question statement along with the 4 options and the buttons to go to previous question(which will be disabled on the first question), to save and go to the next question(which will be disabled on the last question, and a user cannot go to the next question without selecting an option to the question) and a submit button

which will submit the quiz, also if the timer runs out, the responses of the student will be automatically saved and the quiz will get auto submitted.

- On the scores page, the student will be able to see the score of each quiz he has attempted along with name of the quiz, number of questions it had, date of attemption and time of attemption along with the marks scored in that quiz.
- The summary page will show the chart of subject-wise attempted quizzes(it will count each and every attempted quiz whether same or different) and quiz attempts per month.

## **Video**

<https://drive.google.com/file/d/1ThT3NBTuUzQboRYPLwjeNapHUu1SH2Gr/view?usp=sharing>