# MAD II PROJECT REPORT

QUIZ MASTER Application

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**Problem Statement**:

To build a multi-user web application which acts as a quiz hosting platform which acts as an exam preparation website for multiple courses, both academics and in general.

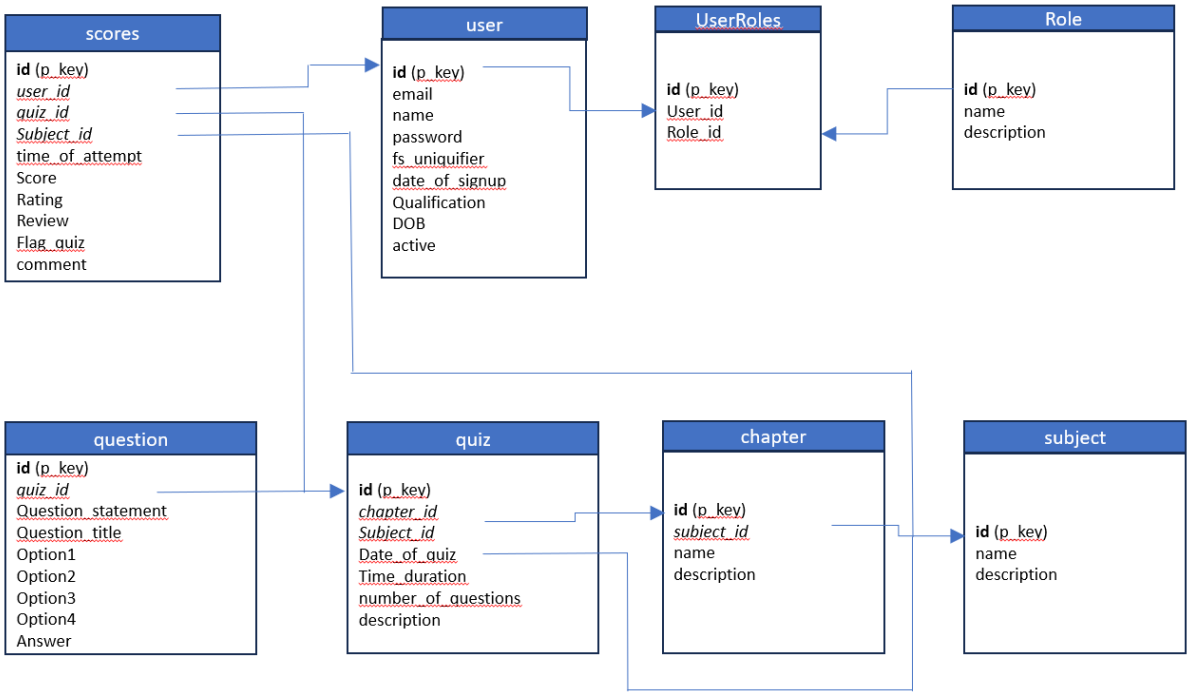
**Approach**:

- Divided the roles and responsibilities for the admin and users
- Brainstormed the needs of the users in the front end
- Created the ER Diagram based on the needs of users and responsibilities of admin
- Designed different backend API end points according to the needs of the front end
- Mapped the involvement of user and admin in each of the core functionality of the application
- Designed the workflow for each core functionality
- Implemented the backend logic in controller for each of the functionalities
- Implemented the frontend linking to the backend
- Designed the async backend jobs which for the daily reminder, monthly reports and enabled the scores data export in the front end
- Cached frequently fetched data

**Frameworks and libraries used**:

1. Flask: Backend framework and API end points for the web application
2. VueJS for UI: Frontend framework for the web application
3. Bootstrap: Frontend technology for HTML generation and styling
4. Jinja2: Template engine to render HTML pages dynamically wherever needed (limited use)
5. SQL Alchemy: Object Relation Mapping tool for database interaction
6. SQLite: Database management system for managing application data
7. Chart.js: Library used for creating interactive, responsive, and animated charts in web applications
8. Redis and Celery for batch jobs: Technologies used together for handling asynchronous backend task queues efficiently
9. Redis for caching: In-memory key-value store used for caching, improving performance, and reducing database load in web applications

**ER Diagram**:




The above diagram shows the relations between the entities defined as part of the application model: User, Roles, UserRoles, Scores, Subject, Chapter, Quiz, Question

**API resource endpoints**:

| Model | Method | API End Point |
|---|---|---|
| **Subject** | GET | /api/subject/get |
| | POST | /api/subject/get', '/api/subject/create |
| | PUT | /api/subject/update/<int:sub_id> |
| | DELETE | /api/subject/delete/<int:sub_id> |
| **Chapter** | GET | /api/chapter/get/<int:sub_id> |
| | POST | /api/chapter/create/<int:sub_id> |
| | PUT | /api/chapter/update/<int:ch_id> |
| | DELETE | /api/chapter/delete/<int:ch_id> |
| **Quiz** | GET | /api/quiz/get/<string:ch_sub>/<int:id> |
| | POST | /api/quiz/create/<int:ch_id> |
| | PUT | /api/quiz/update/<int:quiz_id> |
| | DELETE | /api/quiz/delete/<int:quiz_id> |

| | | |
|---|---|---|
| **Question** | GET | /api/question/get/<int:quiz_id> |
| | POST | /api/question/create/<int:quiz_id> |
| | PUT | /api/question/update/<int:que_id> |
| | DELETE | /api/question/delete/<int:que_id> |
| **Score** | GET | /api/score/get/<string:sub_quiz>/<int:id> |
| | POST | /api/score/create/<int:quiz_id> |
| **User** | GET | /api/user/get |

**Drive link for presentation video:**

URL: https://drive.google.com/file/d/1I2I11ewVKCn0sDxHkjXh0XWMFC__UAmF/view?usp=sharing

==========THANK YOU==========