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Hi, I am Utkarsh Sahu, a second-year engineering student at Delhi Technological University. I like coding and development. I also enjoy watching web series and cooking. I hope you will like my project.

Description

My understanding of the problem statement was that the app in itself is straightforward. We need to create a database to store users, their decks and the cards within multiple decks. In short, we had to implement an app that allows users to register/login and create decks, and within decks, create cards and track the progress, i.e., **there will be multiple users, one user might have multiple decks and one deck have numerous decks.**

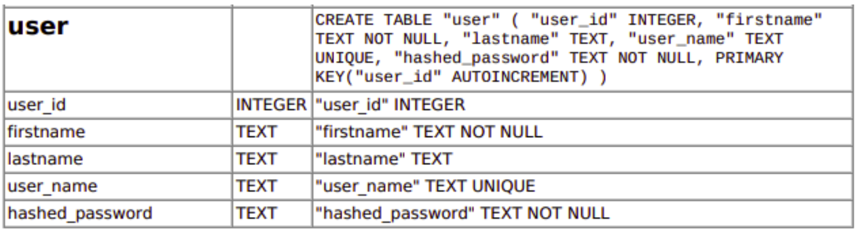
Technologies used

These are the technologies/dependencies that I have used:

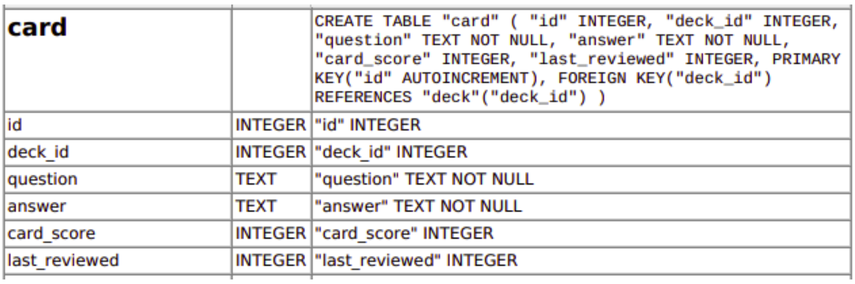
- **flask** - for main flask app
- **flask_restful** - for REST API implementation
- **flask_login** - for user session management
- **flask_ckeditor** - rich text editor for flask
- **flask_sqlalchemy** - add support to image upload, code syntax highlighting and more
- **werkzeug** - for generating password hash and checking password
- **flask_wtf ,wtforms, wtforms.validators** - for making forms and their validation
- **json** - for returning json response from APIs
- **sqlalchemy** - Object Relational Mapper in python for SQL

DB Schema Design

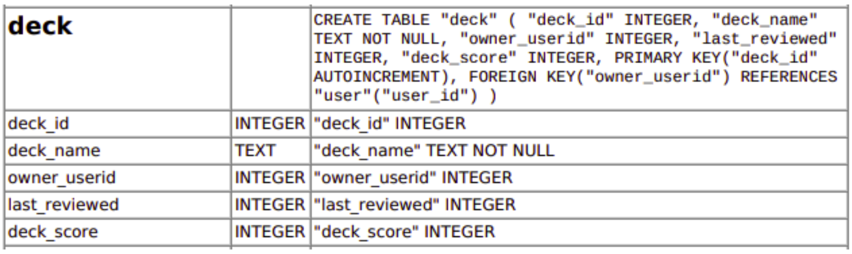
The Schema Design has been kept very simple, one table for Users, one for Decks and one for Cards. User Table has **user_id** as primary key and **user_name** field has been kept as unique because first-name and last-name might be similar for two different users and **user_id** is a foreign key in **Deck** table so as to know the owner of that deck and **deck_id** is a foreign key in **Card** table so as to know which deck does the card belongs to. Each deck and card has a last_reviewwed column and score column so as to store the latest time and score for tracking the progress of the user. In simple words, **there can be multiple users, one user can create multiple decks, one deck might have many cards.** The following images describe tables in the database, their columns and their column type with constraints(if any). **"user_name"** has been kept unique because that identifies the user too and is a common way.



user		CREATE TABLE "user" ("user_id" INTEGER, "firstname" TEXT NOT NULL, "lastname" TEXT, "user_name" TEXT UNIQUE, "hashed_password" TEXT NOT NULL, PRIMARY KEY("user_id" AUTOINCREMENT))
user_id	INTEGER	"user_id" INTEGER
firstname	TEXT	"firstname" TEXT NOT NULL
lastname	TEXT	"lastname" TEXT
user_name	TEXT	"user_name" TEXT UNIQUE
hashed_password	TEXT	"hashed_password" TEXT NOT NULL



card		CREATE TABLE "card" ("id" INTEGER, "deck_id" INTEGER, "question" TEXT NOT NULL, "answer" TEXT NOT NULL, "card_score" INTEGER, "last_reviewed" INTEGER, PRIMARY KEY("id" AUTOINCREMENT), FOREIGN KEY("deck_id") REFERENCES "deck"("deck_id"))
id	INTEGER	"id" INTEGER
deck_id	INTEGER	"deck_id" INTEGER
question	TEXT	"question" TEXT NOT NULL
answer	TEXT	"answer" TEXT NOT NULL
card_score	INTEGER	"card_score" INTEGER
last_reviewed	INTEGER	"last_reviewed" INTEGER



deck		CREATE TABLE "deck" ("deck_id" INTEGER, "deck_name" TEXT NOT NULL, "owner_userid" INTEGER, "last_reviewed" INTEGER, "deck_score" INTEGER, PRIMARY KEY("deck_id" AUTOINCREMENT), FOREIGN KEY("owner_userid") REFERENCES "user"("user_id"))
deck_id	INTEGER	"deck_id" INTEGER
deck_name	TEXT	"deck_name" TEXT NOT NULL
owner_userid	INTEGER	"owner_userid" INTEGER
last_reviewed	INTEGER	"last_reviewed" INTEGER
deck_score	INTEGER	"deck_score" INTEGER

API Design

The REST API has been created for **GET, PUT, DELETE, POST** methods which allow us to perform **CRUD operations** on the User, Deck, Card entities.

UserApi:

METHOD	API endpoints	Request Parameters	Response Parameters
GET	"/api/user/<string:username>"	-	userid,username,firstname,lastname
PUT	"/api/user/<string:username>"	-	new_fname,new_lname
DELETE	"/api/user/<string:username>"	-	deleteduser_id,deleteduser_fname,deleteduser_lname,deleteduser_username
POST	"/api/user"	firstname, lastname, username, password	newuserid,newuser_fname,newuser_lname, newuser_username,message

DeckApi:

METHOD	API endpoints	Request Parameters	Response Parameters
GET	"/api/deck/<int:deckid>"	-	deck_id, deck_name, owner_userid, last_reviewed, deck_score
PUT	"/api/deck/<int:deckid>"	-	deck_id, updateddeck_name, owner_userid, last_reviewed, deck_score
DELETE	"/api/deck/<int:deckid>"	-	deck_id, deck_name, owner_userid, last_reviewed, deck_score
POST	"/api/deck/"	deckid,deckname,ownerid	deck_id, deck_name, owner_userid, last_reviewed, deck_score

CardApi:

METHOD	API endpoints	Request Parameters	Response Parameters
GET	"/api/card/<int:cardid>"	-	cardid, question, answer, cardscore, parent_deckid, last_reviewed
PUT	"/api/card/<int:cardid>"	-	cardid, updated question, updated answer, cardscore, parent_deckid, last_reviewed
DELETE	"/api/card/<int:cardid>"	-	deleted cardid, question, answer, deleted cardscore, parent_deckid, last_reviewed
POST	"/api/card/"	question,answer,deckid	created cardid, question, answer, cardscore, parent_deckid, last_reviewed

Architecture and Features

The architecture of the project has been kept fairly simple and standard. The main code to run and set up the application is in **main.py.** All the dependencies are listed in **requirements.txt. db_directory** is the folder that contains database. The **application** folder contains all the main parts of the application, like controllers,api, config, models and forms. The **static** folder has the static files which are needed. The **templates** folder has all the **jinja2** template files.

Features implemented are **Dashboard management, Secure login framework, Deck/Card management, Reviewing card for progress, Backend Validation, Styling and Aesthetics and last but not least a rich text editor** using standard ways and the technologies/dependencies listed above.

Video

Please watch this video for knowing more about the project.
https://drive.google.com/file/d/1AYtdUSBbtke6YrP2MEeI5FhL2YTMyueP/view?usp=sharing