Author

Pratham Shah
23f2003391
23f2003391@ds.study.iitm.ac.in

I am third year student pursuing offline(GTU-BE in CSE) degree as well as online IITM BS degree. Currently exploring wide areas of interest in both traditional development as well as ML and AI.

Description

Basic vehicle parking management app in which there needs to be predefined admin which can create/delete/set criteria's for lots and oversee user activities. User can register for app and then can book and release a spot and can see his parking history.
AI used: 5% JavaScript (although for confirm password only) + 2% charts.js (for solving errors only).

Technologies used

Flask -> (render_template, blueprint -> for routes, redirect, request, etc)
Flask-Login -> for secure login and managing sessions.
Flask-SqlAlchemy -> for db management
Werkzeug -> for hashing and password check
HTML + BootStrap + Jinja-> Frontend + Framework + templating
CSS -> for designing (minimally used)
JS -> for user experience (minimally used)
Charts.js -> for making charts
RE -> for regular expressions

DB Schema Design

User table

Column	Data type	Constraint
id	Integer	Primary Key
name	String(20)	Not null
age	Integer	Not null
username	String(30)	Unique, Not null
password	String(256)	Not null
role	String(20)	Default='user', Not null

Parking Spot table

Column	Data type	Constraint
id	Integer	Primary Key
lot_id	Integer	Foreign key= parking_lot.id, Not null
status	String(1)	Default='A', Not null

Parking Lot table

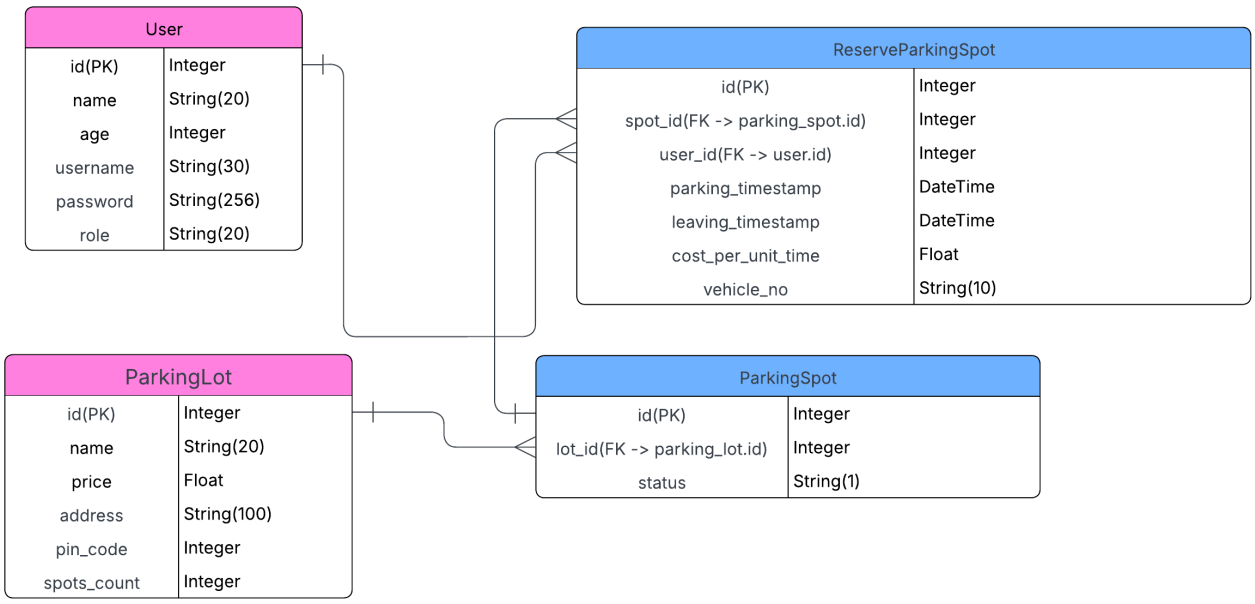
Column	Data type	Constraint
id	Integer	Primary Key
name	String(20)	Not null
price	Float	Not null
address	String(100)	Not null
pin_code	Integer	Not null
spots_count	Integer	Not null

Reserve Parking Spot table

Column	Data type	Constraint
id	Integer	Primary Key
spot_id	Integer	Foreign key= parking_spot.id, Not null
user_id	Integer	Foreign key= user.id, Not null
parking_timestamp	DateTime	Default=datetime.now, Not null
leaving_timestamp	DateTime	Nullable
cost_per_unit_time	Float	Not null
vehicle_no	String(10)	Not null

Relations:
User -> One to many with Reserve Parking Spot
Parking Spot -> Many to one with Parking lot, One to many with Reserve Parking Spot
Parking Lot -> One to many with Parking Spot
Reserve Parking Spot -> Many to one with Parking Spot, Many to one with User

ER DIAGRAM -> LUCIDCHART



Architecture and Features

Visual representation of project directory
/vehicle-parking-app
- /routes(3 routes/controller file + __init__.py)
- /static
  - /images(1 image)
  - style.css
- /templates(all the html templates)
- /models(4 models + __init__.py)
- .gitignore
- app.py
- README.md
- Requirements.txt

Notable Features implemented are
Used Regular Expressions for both frontend and backend validations.
Made confirm password(reenter) and view password options in user registration.
Used flask-login for session management and werkzeug for password hashing.

Video

https://drive.google.com/file/d/1xCTHq1H2GNAlIM06Mp_Q-mFIckc5bAfM/view?usp=sharing