

# Vehicle Parking App - Project Report

## Author

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## Description

The Vehicle Parking App is a simple and efficient web application designed to manage parking spaces with ease. Built using Flask and SQLite, it helps regular users find, reserve, and release parking spots in just a few clicks. On the other hand, admins have full control — they can add or edit parking lots, monitor usage through analytics, and manage user reservations. The system is smart enough to distinguish between users and admins, showing each only what they need. It even calculates the total parking cost based on how long the spot was used, making the entire process automatic.

We used Jinja2 + HTML (15%) for dynamic page rendering and APIs/External Integration (2%) for internal data operations. AI/ML (4%) was used for custom logic, visualizations, and debugging — totaling 21% AI/ML integration across the project.

Technologies Used

- Backend: Python, Flask
- Frontend: HTML, CSS, Bootstrap, Jinja2
- Database: SQLite
- Tools: GitHub, VS Code

## DB Schema Design

1. User(id, username, password, contact, vehicle\_number, is\_admin)
2. ParkingLot(id, name, landmark, address, pincode, price, max\_spots)
3. Place(id, lot\_id, number, is\_reserved)
4. Reservation(id, user\_id, place\_id, start\_time, end\_time, status, cost\_per\_hour)

## API Design

- /login, /signup, /logout – User authentication
- /dashboard – Role-based dashboard
- /addlot, /editlot/<id>, /deletelot/<id> – Admin lot management
- /viewlots – List all lots with search and availability
- /reserve/<place\_id>, /release\_place/<place\_id> – Reservation management
- /history – User reservation history
- /users – Admin view of users
- /analytics – Admin usage and availability report
- /admin/history – Full reservation history

## Architecture & Features

- Flask-based MVC structure
- User authentication with session-based roles
- Reservation system with real-time availability and pricing

- Admin dashboard with search, analytics, and management features
- Separate views and logic for users and admins

### **Video Demo**

Watch the demo here:

[https://drive.google.com/file/d/1kwWV0-DSuJ8OR7lcSbFplr\\_LhVW3INOR/view?usp=sharing](https://drive.google.com/file/d/1kwWV0-DSuJ8OR7lcSbFplr_LhVW3INOR/view?usp=sharing)