Online Vehicle Parking Management System

Presented by

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INTRODUCTION :

* The Vehicle Parking System is designed to address the growing need for efficient parking management in urban areas. By optimizing operations and improving the user experience, the system ensures smoother parking processes and better utilization of available space.

Project Overview

Key Features:

- User management with role-based access control
- Vehicle category and parking slot management
- Dynamic rate calculation for parking fees
- Real-time parking tracking (in/out time, duration, earnings)
- Reporting and analytics

Target Audience:

- Shopping malls
- Office complexes
- Public parking facilities

Technology Stack

Frontend

- Bootstrap JavaScript, HTML, Ajax, Jquery

Backend

- PHP handling server-side logic and APIs call

Database

- MySQL stores essential data
- Core tables: users, vehicles, slots, bookings, payments

SOFTWARE

- XAMPP -Hosted and tested the project locally using

START
↓
User Login/Registration
↓
Vehicle Registration (if new)
↓
Check Available Slots
↓
Select Parking Slot
↓
Generate Entry Ticket
↓
Vehicle Parks
↓
Exit Request
↓
Calculate Duration & Amount
↓
Process Payment
↓
Generate Receipt
↓
Update Slot Status
↓
END

MySQL Database Schema

```
CREATE TABLE parking_slots (
  slot_id INT PRIMARY KEY,
  zone VARCHAR(20),
  status ENUM('available', 'occupied'),
  vehicle_type VARCHAR(20)
);
```

Indexes

Used for rapid searching of available slots and fast query response.

Transactions

Ensure booking integrity and prevent double-booking during concurrent access.

Live Data Demo: Real-Time Parking Status

1

Data Query

SELECT zone, COUNT(*) FROM parking_slots WHERE status='available' GROUP BY zone;

2

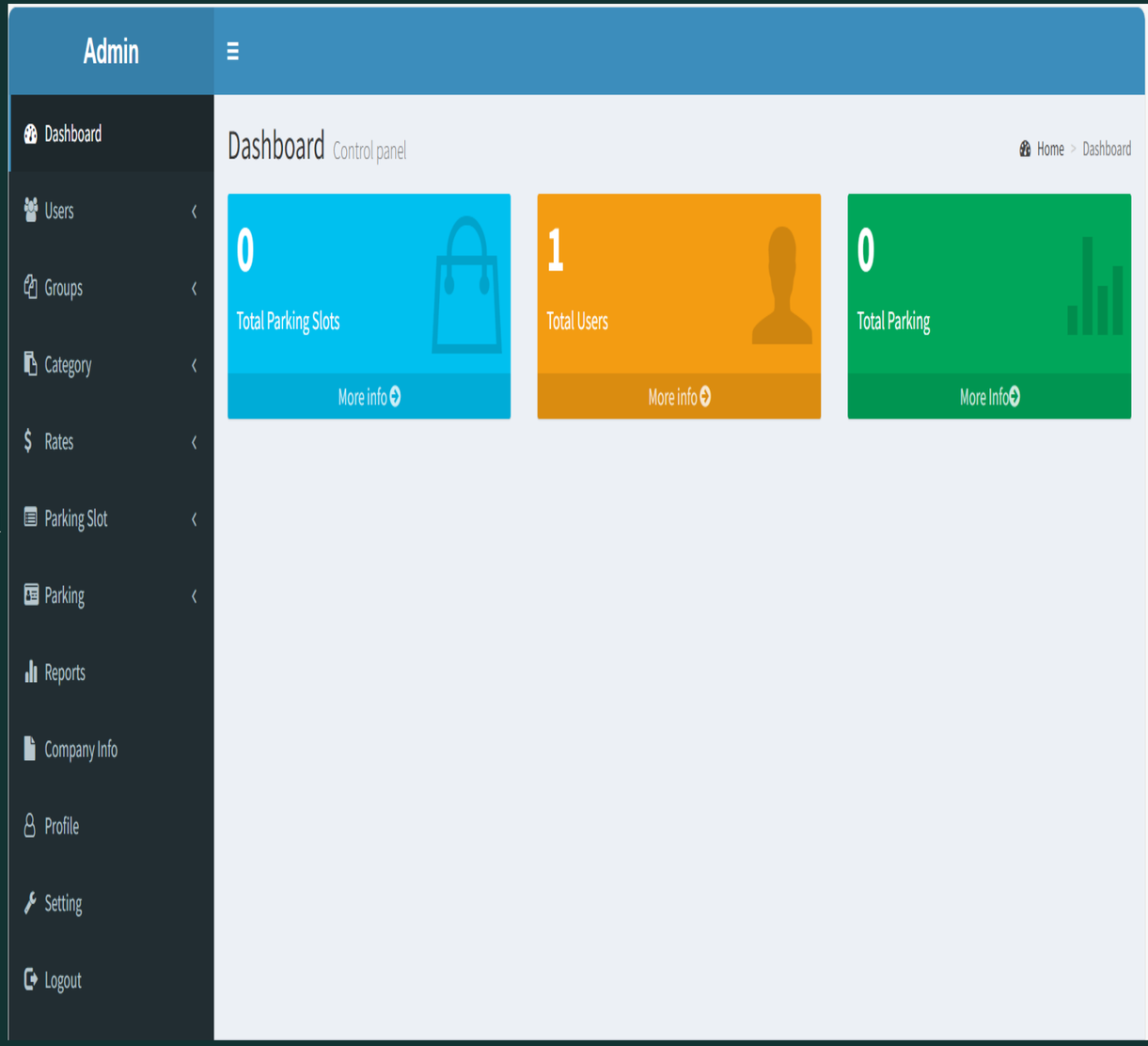
Data Processing

The system aggregates available slots dynamically for dashboard visualization.

3

Visualization

Interactive graphs help administrators quickly identify parking availability by zone.



User Flow for Parking Management

Step 1: Booking

User selects a slot; MySQL INSERT adds booking record.

Step 2: Status Update

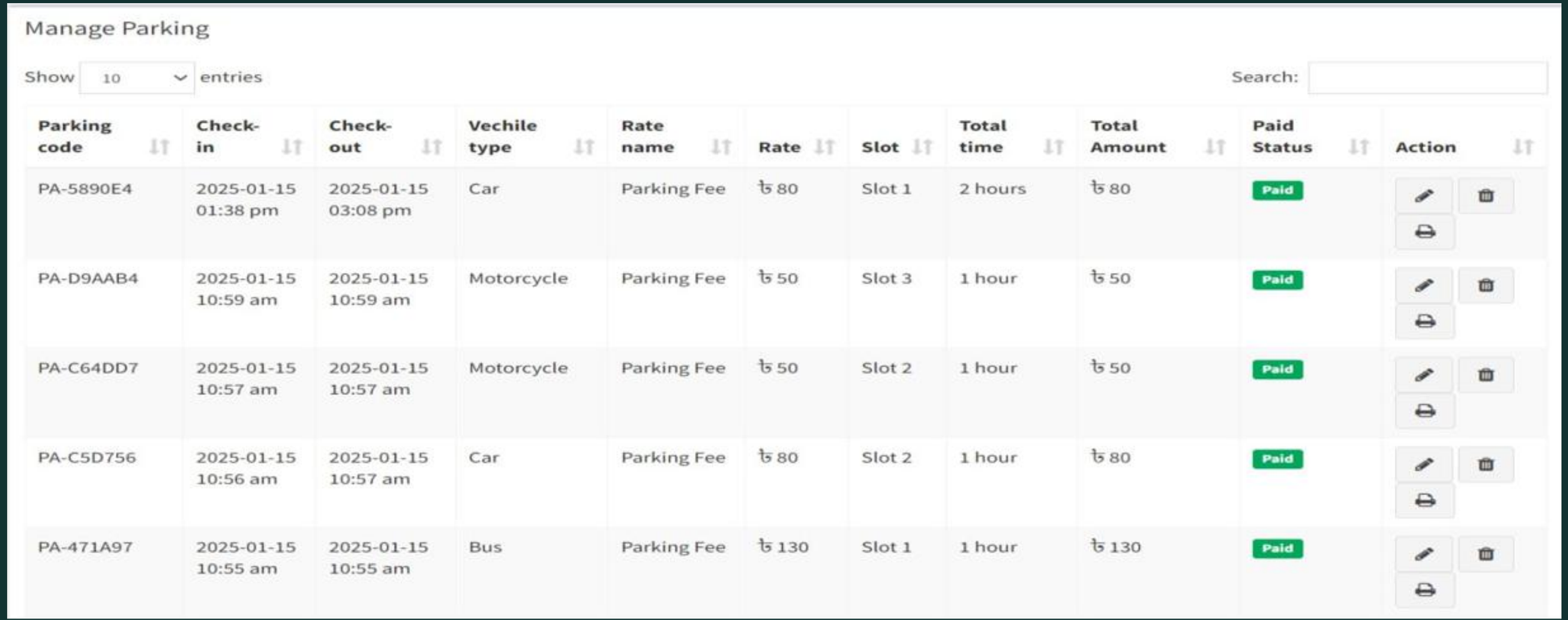
Parking sensors update slot status using MySQL UPDATE queries in real time.

Step 3: Payment

Payment information is recorded with a MySQL INSERT into the payments table.

Result of this system

The vehicle parking system was successfully implemented and tested. It meets the goals of simplifying parking operations, ensuring accurate payment tracking, making the best use of parking spaces, and managing different types of vehicles efficiently.



Manage Parking

Show 10 entries

Search:

Parking code	Check-in	Check-out	Vechile type	Rate name	Rate	Slot	Total time	Total Amount	Paid Status	Action
PA-5890E4	2025-01-15 01:38 pm	2025-01-15 03:08 pm	Car	Parking Fee	৳ 80	Slot 1	2 hours	৳ 80	Paid	
PA-D9AAB4	2025-01-15 10:59 am	2025-01-15 10:59 am	Motorcycle	Parking Fee	৳ 50	Slot 3	1 hour	৳ 50	Paid	
PA-C64DD7	2025-01-15 10:57 am	2025-01-15 10:57 am	Motorcycle	Parking Fee	৳ 50	Slot 2	1 hour	৳ 50	Paid	
PA-C5D756	2025-01-15 10:56 am	2025-01-15 10:57 am	Car	Parking Fee	৳ 80	Slot 2	1 hour	৳ 80	Paid	
PA-471A97	2025-01-15 10:55 am	2025-01-15 10:55 am	Bus	Parking Fee	৳ 130	Slot 1	1 hour	৳ 130	Paid	

Conclusion & Future Scope

Why MySQL?

Offers reliability, scalability, and full ACID compliance vital for transaction integrity.

Future Enhancements

Integration of AI for slot allocation optimization, leveraging MySQL with Python analytics.

Mobile Integration

Development of a mobile app connected to cloud-based MySQL backend for user convenience.

The vehicle parking system effectively improves parking management by automating check-ins, check-outs, and payments while optimizing space and supporting different vehicle types. It simplifies operations and enhances user convenience.

THANK YOU !