Parking Lot Management System

By: Eric Reyes

Efficient and Smart Parking Solutions for Busy Areas

Finding parking has never been easier! Our Parking Lot Management System provides real-time availability updates, automated ticketing, and secure payment processing to ensure a seamless parking experience.

Demo Link:

https://drive.google.com/file/d/10WZCD6vkJ1e8mOWMkvqQUHkVZBXCj1Fn/view?usp=drive_link

PowerPoint Link:

https://drive.google.com/file/d/1HcgN9oiijkwTUH9mUaVDn1BI9W3iTMqI/view?usp=drive_link

Project Webpage URL:

https://github.com/Ric017/Final-Project.git

Key Features:

Real-time Parking Availability – View available parking spots categorized by vehicle type (handicapped, compact, large, motorcycle).
Automated Ticketing System – Receive a parking ticket upon entry, tracking parking time for accurate fee calculation.
Effortless Payment Options – Pay conveniently at exit panels using credit/debit cards or cash.
Dynamic Display Board – Instantly shows free parking spots for quick decision-making.
Full Capacity Control – Prevents new vehicle entry when the lot is full, reducing congestion.
Scalability & Cost Efficiency – Designed for small and large-scale parking facilities to optimize costs and operations.

System Requirements:

Software Requirements:

- **Frontend:** HTML, CSS, JavaScript
- **Backend:** Python (Flask/Django) or Node.js for efficient processing
- **Database:** MySQL or PostgreSQL for secure data management
- **Version Control:** Git & GitHub for collaboration

Hardware Requirements:

- **Servers** – Hosting backend and database operations
- **Digital Display Boards** – To show real-time parking updates
- **Automated Payment Terminals** – Ensuring quick and secure transactions

Network Requirements:

- **Stable Internet Connection** – Ensuring real-time data synchronization
- **Cloud Hosting or Local Server** – For system accessibility and reliability

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Who Can Benefit?

Commuters – Find parking spots easily in busy areas.
Business Owners – Automate parking operations and reduce manual efforts.
Event Organizers – Manage large-scale parking efficiently for stadiums and concerts.

Screenshots of the System:

```
Initial Parking Lot Status:
Available spots: 5 / 5
Spot 1: Available
Spot 2: Available
Spot 3: Available
Spot 4: Available
Spot 5: Available

Assigning vehicles...
Spot 1 assigned to vehicle: ABC123
Spot 2 assigned to vehicle: XYZ456
Spot 3 assigned to vehicle: LMN789
Spot 4 assigned to vehicle: PQR321

Updated Parking Lot Status after assigning vehicles:
Available spots: 1 / 5
Spot 1: Occupied by vehicle ABC123
Spot 2: Occupied by vehicle XYZ456
Spot 3: Occupied by vehicle LMN789
Spot 4: Occupied by vehicle PQR321
Spot 5: Available
```

```
Exiting vehicles...
Vehicle XYZ456 is exiting from spot 2
Ticket for vehicle: XYZ456
Entry time: 2025-03-18T18:01:17.781580400
Exit time: 2025-03-18T18:01:22.788381300
Parking duration: 0 hours, 0 minutes, 5 seconds
Spot 5 is already vacant.

Processing payment for vehicles...
Payment of $10.0 received for vehicle ABC123
Payment of $15.0 received for vehicle XYZ456
Payment of $20.0 received for vehicle LMN789
Payment of $25.0 received for vehicle PQR321

Updated Parking Lot Status after vehicle exits and payment processing:
Available spots: 2 / 5
Spot 1: Occupied by vehicle ABC123
Spot 2: Available
Spot 3: Occupied by vehicle LMN789
Spot 4: Occupied by vehicle PQR321
Spot 5: Available
```

Experience Smart, Hassle-Free Parking Today!

Title: Parking Lot Management System - Demo Presentation

Slide 1: Introduction

- **Project Name:** Parking Lot Management System
- **Your Name:** Eric Reyes
- **Brief Description:** A smart system for real-time parking space management and automated payment processing.

Slide 2: Target Users

- **Commuters:** Need convenient parking solutions in shopping malls, offices, and stadiums.
- **Business Owners:** Require efficient management of parking lots.
- **Event Organizers:** Need to handle large parking demands efficiently during events.

Slide 3: Demo Roadmap

- **Overview of system features**
- **Live demonstration of:**
    - Parking entry & availability tracking
    - Ticketing & time tracking
    - Payment process & exit
- **Future Roadmap**

Slide 4: Live Demonstration

- **(A) Parking Entry & Availability Tracking**
    - Show real-time parking availability dashboard.
    - Simulate a vehicle entering and the system assigning a spot.
    - Demonstrate how entry is restricted when full.
- **(B) Ticketing & Time Tracking**
    - Show how the system issues a ticket.
    - Demonstrate how parking duration is recorded.
- **(C) Payment & Exit**
    - Walk through the payment process (card/cash).
    - Show how the system updates availability after a successful payment.

Slide 5: Future Roadmap

- Enhancing UI/UX for a smoother user experience.
- Adding AI-based predictive analytics for parking trends.
- Implementing mobile app support for reservations and notifications.

- Scaling system capabilities for large parking facilities.