PRE-BOOKING PARKING AREA SYSTEM

1. Modules

a. Admin Management Module

- **Features**:
    - View user details.
    - Add cost details.
    - View slot details.
    - Daily wise slot updation
    - Update the slot's availability when the booked time and date have passed

b. User Management Module

- **Features**:
    - User register to create a profile.
    - User can login and become member of the system.
    - View status of the bookings.

c. Slot Selection Module

- **Features**:
    - User can select the slot using date, time and hours.
    - User can view the details and cost to confirm bookings.
    - User can confirm their slot and make payments .

d. Waitlist Management

- **Features**:
    - Create a system that places users in queue and notifies when a slot becomes available.

e. Payment and Transaction Module

- **Features**:
    - Secure payment integration using gateways like Stripe or PayPal.
    - Booking confirmations are sent to users, and the system updates slot availability accordingly.

f. Refund System and Penalty

- **Features**:
    - Charge a penalty for late cancellation made within a hour of the booking start time.
    - Provide a refund for cancellation made before the penalty.

g. User Feedback

- **Features**:
    - Adding a google form for user feedback.
    - Collected data can be view by only admin.

2. Datasets / Tables in the Database

Database Tables:

1. **Users Table**:
    - userId, name, email, password.
2. **Slot Table**:
    - Slotid, status, cost
3. **Booking Table**:
    - Bookingid, userid, slotid, date, start_time, hours, total_cost.
4. **Payments Table**:
    - paymentId, bookingId, amount, payment_method, payment_status.
5. **Penalty Table**:
    - Penaltyid, bookingid, userid, penalty_amount, reason.
6. **Refund Table**:
    - Refundid, bookingid,userid,refund_amount, status.
7. **Feedback Table**:
    - Fdid, userid, comments, ratings.
8. **Waitlist Table**:
    - Waitlisted, userid, requested_date, requested_time, status.

3. Reference List of Papers, Journals, and Blogs

Papers and Journals

1. "A survey on smart parking system"
    - *DOI:* 10.1109/xyz2021.12345

2. "Design and Development of a Cloud-Based Smart Parking System"
    - Authors**:** S. Abhirup, S. Choudhury.
3. "Dynamic Pricing for Smart Parking Systems"
    - Author**s:** L. Zhang, J. Lee, J. Meng

Blogs and Articles

1. Freelance Task Platforms: Trends and Challenges
2. How to Build a Reward System in Web Applications
3. Efficient Database Design for Web Applications.

4. Objectives

1. To provide a user-friendly platform.
2. To equip parking administrators with tools to manage .
3. To enable users to access booking details and assist users with slot allocation and slot availability.
4. To allow users to track booking history, check payment records.
5. To ensure data security and scalability, allowing for future enhancements.

5. Problem Statement

- **Existing Issues:**
    1. Difficulty in finding available parking slots in busy areas or during peak hours, leading to frustration for users.
    2. Difficulty in handling cancellations, penalties, and refunds, leading to user dissatisfaction and operational challenges.
    3. Restricted payment methods, unclear fee structures, or issues with payment processing that impact users' trust and experience.
    4. Inaccurate or outdated slot availability data, causing issues for users attempting to book spaces that have already been taken.

6. Innovative Ideas in the Project

1. **Real-Time Slot Availability Updates:**
    - Introduce a real-time parking slot availability feature that shows users the exact availability of parking spaces, reducing the chances of wasted time and frustration.
2. **Reward System for Frequent Users:**

- Offer a loyalty program where users earn points for frequent bookings, which can be redeemed for discounts or special privileges such as reserved spots.

3. **Advanced Slot Recommendation Engine:**
    - Create a system that suggests the most suitable parking spots based on user preferences, such as proximity to their destination, previous booking history, and real-time traffic conditions.
4. **Admin Dashboard for Real-Time Monitoring:**
    - Personalized recommendations based on user profiles and historical activities.