Name: Areeba Yaseen

Roll No :461887

"Marketplace Technical Foundation

Car Rental Marketplace: Technical Foundation Plan

1: System Architecture Overview:

The system architecture for the car rental e-commerce MarketPlace is designed to facilitate seemless interaction between the frontend , ApIs and the CMS(sanity).The following components play as:

Aap apne car rental e-commerce marketplace ke liye system architecture bana rahe hain. Kuch key components aur design principles hain jo aapko apne system architecture mein consider karne chahiye:

1. **User Interface (Frontend)**

- **Technologies**:
- **Next.js** for building a dynamic and responsive frontend.
- **Tailwind CSS** for styling.
- **Axios** and GROQ Query for fetching data from **Sanity** CMS and making API calls for other services.
- Components:
- **Navbar**: Contains the logo, search bar, icons for heart, bell, settings, and user profile.
- **Home Page**:
  - Car listings (with filtering options like car type, seating capacity, etc.).
  - Popular cars section with images and details fetched from **Sanity**.
  - Car recommendations section.
  - Pickup & Dropoff date/time selection card.
- **Car Detailing Page**:
  - Detailed car information with booking options.
  - Ability to rent a car and proceed to payment.
- **User Profile Dashboard**:
  - View and manage past bookings, current bookings, and payment methods.
- **Booking Page**:
  - Payment gateway integration (Stripe).
  -
  - **2. CMS as Backend**
  - **Sanity** will act as your database and content management system.
  - **Sanity Features:**
- **Content Studio**: Admin panel to manage cars, bookings, aur other content .
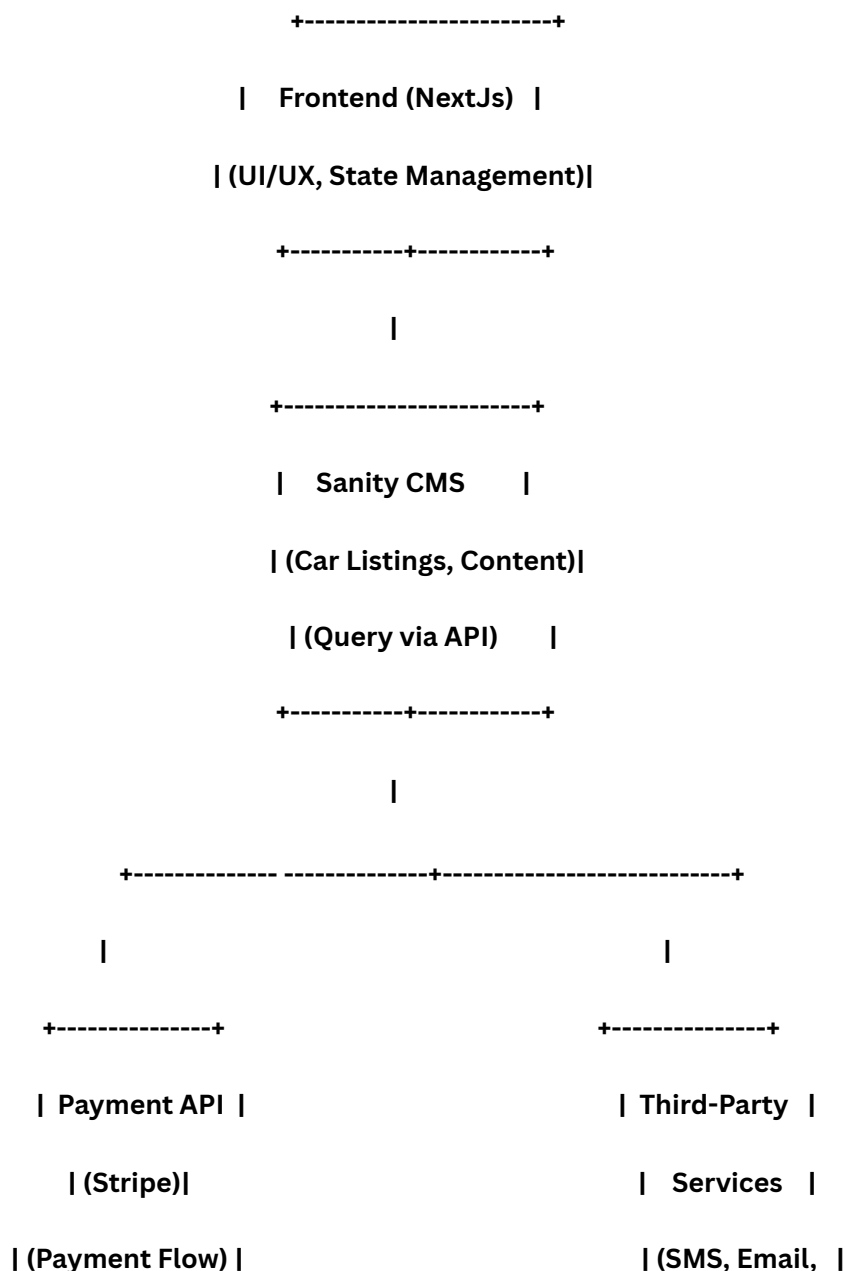
- **Car Listings**: To store car related data:
  For Example:
    - Car name, make, model, year, type, seating capacity, and availability.
    - Car images.
    - Car pricing.
- **Bookings** (optional): To track booking data by storing booking details to sanity.

3. Third-Party APIs:

- **Payment Gateway (External API)**
- mange secure transaction (e.g:stripe)
- **Payment Flow:**
1. User selects a car and proceeds to checkout.
2. Frontend interacts with **Stripe**to handle payment processing.
3. Once payment is confirmed, backend processes the booking (using Sanity).
- **Location ApIs:**
- Provide geolocation data for vehicle pick-up and drop-off lcation.

```
                    +------------------------+

                    |   Frontend (NextJs)  |

                    | (UI/UX, State Management)|

                    +-----------+------------+

                                |

                    +------------------------+

                    |    Sanity CMS       |

                    | (Car Listings, Content)|

                    | (Query via API)      |

                    +-----------+------------+

                                |

        +-------------- --------------+---------------------------+

        |                                          |

    +---------------+                      +---------------+

    |  Payment API  |                      |  Third-Party  |

    | (Stripe)|                            |   Services   |

    | (Payment Flow) |                     | (SMS, Email,  |
```

```
+----------------+                              |  Geolocation) |
```

Key Workflow for Our Car Rental Marketplace

1. User Registration and Login

- Users can sign up or log in to the platform using email, phone, or social accounts.
- Verification process (email/phone OTP).

2. Car Search

- Users search for available cars by location, date, type, or budget.
- Advanced filters for model, brand, and features (e.g., automatic, manual, fuel type).

3. Car Selection

- User selects a car and views detailed information:
    - Price per day/hour.
    - Owner details.
    - Terms and conditions.

4. Booking Process

- User enters rental details:
    - Pickup and drop-off dates/times.
    - Delivery location (if applicable).
- Estimated rental cost is calculated.

5. Payment

- Multiple payment options (credit/debit card, online wallets, etc.).
- Security deposit collected if required.
- Payment confirmation triggers booking confirmation.

6. Booking Confirmation

- Booking details emailed/texted to user and owner.
- Both parties receive a rental agreement copy.
- Option to cancel or modify booking before pickup.

7. Car Pickup/Delivery

- User picks up the car from the agreed location or opts for home delivery.
- User and owner inspect the car and sign off on the condition.

8. Rental Period

- User enjoys the rental.

- Option for the user to extend the rental (if allowed by the owner).

9. Car Return

- Car returned to the owner.
- Inspection by the owner to verify condition.
- Security deposit refunded if no damages.

10. Ratings and Reviews

- Both user and owner rate each other based on the rental experience.
- Reviews improve credibility for both parties.

11. Admin Oversight

- Admin monitors bookings, resolves disputes, and handles complaints.
- Admin verifies user and owner accounts periodically.

This workflow ensures smooth operations for a car rental marketplace while providing transparency and trust for all parties involved.