**TAXI BOOKING SYSTEM**

**Problem Statements**

**For Users (Passengers)**

1. Difficulty in Finding Taxis

Problem: Users often struggle to locate an available taxi, especially during peak hours, in remote areas, or under bad weather conditions.

Impact: Inconsistent access to transportation, long wait times, and the inconvenience of having to search for a taxi manually.

1. Uncertain Pricing

Problem: Without an app, users are unsure of the fare before the ride starts, leading to unpredictable pricing and the risk of being overcharged.

Impact: Frustration over inconsistent pricing, especially for tourists or those unfamiliar with standard rates.

1. Lack of Ride Tracking:

Problem: Users have no way to track the taxi’s location or estimated arrival time.

Impact: Increased anxiety over whether the taxi will arrive, longer wait times without any updates, and lack of transparency in the driver's route.

1. Inability to Book in Advance:

Problem: Users cannot easily schedule rides in advance without direct communication with the taxi service.

Impact: Limited flexibility for those who need guaranteed rides for appointments or early morning travel.

1. Safety Concerns:

Problem: Without an app, there is no way to verify the driver’s credentials, the car’s condition, or previous user reviews.

Impact: Increased fear of scams, unsafe rides, or untrustworthy drivers.

1. Limited Payment Options:

Problem: Cash is often the only payment method available without an app.

Impact: Inconvenience for passengers who prefer or rely on digital payment methods (e.g., credit cards, mobile wallets).

1. Lack of Customer Support:

Problem: Without an app, users have no easy way to report lost items, complaints, or service issues.

Impact: Poor user experience with no clear recourse for resolving issues or concerns.

1. Limited Availability in Remote Areas:

Problem: In smaller cities or rural areas, it can be difficult to find a taxi service without a centralized platform.

Impact: Lack of transportation options in underserved areas, leaving passengers stranded or forced to use unreliable alternatives.

1. Difficulty in Communicating with Drivers:

Problem: Language barriers or unclear directions can make communication with drivers difficult without an app.

Impact: Misunderstandings, delays, and frustration for both passengers and drivers.

1. User function gap

Problem: While am using Uber service currently I cannot book a uber for anyone else .

Impact : Loss of business and also unable to see taxi status for a family or friend circle

1. Uber drivers are not happy as heavy commission gets deducted
2. No perks/points for end users

**For Drivers**

1. Difficulty in Finding Customers:
   1. Problem: Drivers must rely on random street pickups or phone bookings to find passengers, which can be inconsistent and inefficient.
   2. Impact: Long idle times, missed earning opportunities, and reduced income.
2. Unpredictable Demand:
   1. Problem: Without an app, drivers have no way to predict demand, leading to inefficient positioning and lost business during high-demand periods.
   2. Impact: Suboptimal income, as drivers cannot easily plan or adjust their location to meet demand.
3. Payment and Fare Disputes:
   1. Problem: Without a digital fare calculator, disagreements over ride fares are common, especially if customers feel they’ve been overcharged.
   2. Impact: Frequent disputes, delayed payments, and loss of trust between drivers and passengers.
4. Inconsistent Ride Requests:
   1. Problem: Drivers don’t have access to real-time ride requests, making it hard to secure steady work.
   2. Impact: Unreliable income due to sporadic ride bookings and an inability to fill downtime.
5. No Ride Scheduling:
   1. Problem: Drivers have no way to plan their day or week with advance bookings.
   2. Impact: Missed opportunities for business, especially from customers who prefer booking rides ahead of time.
6. Limited Customer Base:
   1. Problem: Without an online platform, drivers have limited visibility to potential passengers.
   2. Impact: Reduced opportunities to reach a broader customer base, especially new passengers or tourists unfamiliar with the area.
7. Safety and Security Risks:
   1. Problem: Drivers have no way to verify a passenger’s identity or payment method, increasing the risk of unsafe situations or non-payment.
   2. Impact: Safety concerns and potential financial losses for drivers.
8. Lack of Customer Feedback:
   1. Problem: Without a platform, drivers do not receive feedback or ratings from passengers, which could help improve service quality.
   2. Impact: No constructive feedback to help drivers improve their service or earn trust from potential customers.
9. Difficulty Navigating and Reaching Pick-up Points:
   1. Problem: Drivers may struggle to find exact pick-up points without GPS integration, especially in complex areas.
   2. Impact: Delays and cancellations due to missed or unclear pick-up locations.

**High-level Requirement Epics**

1. **Driver and Taxi Company Registration:**
   1. **Outcome:** Ensuring a seamless and secure registration process for both individual taxi drivers and taxi companies.
   2. **Requirement:** A robust registration system that verifies driver credentials, taxi ownership, insurance, vehicle condition ,MOT and background checks.
2. **Customer Registration and Profile Management:**
   1. **Outcome:** Providing a user-friendly interface for customers to create profiles, manage preferences, and access booking history.
   2. **Requirement:** An intuitive registration and profile management system that supports different payment methods and allows easy updates.
3. **Ride Booking and Matching System:**
   1. **Outcome:** Efficiently matching customers with available taxis based on location, availability, and customer preferences.
   2. **Requirement:** An intelligent matching algorithm that optimizes for minimal wait times and fair distribution of bookings among drivers.
4. **Real-time GPS Tracking and Navigation:**
   1. **Outcome:** Providing accurate, real-time location tracking for both drivers and customers.
   2. **Requirement:** Integration with GPS services to allow drivers to navigate to the pickup location and customers to track their ride progress.
5. **Pricing and Fare Calculation:**
   1. **Outcome:** Dynamically calculating fares based on distance, time, and demand.
   2. **Requirement:** A flexible pricing engine that handles base fare, surge pricing, waiting time, and additional charges like tolls.
6. **Payment Processing:**
   1. **Outcome:** Facilitating secure, quick, and multiple payment methods (credit/debit cards, digital wallets, cash).
   2. **Requirement:** Integration with payment gateways to handle transactions, refunds, and promotional discounts.
7. **Driver and Vehicle Management:**
   1. **Outcome:** Managing driver schedules, vehicle maintenance, and compliance with local regulations.
   2. **Requirement:** A management system for taxi companies to oversee their fleet, drivers, and service quality.
8. **Customer Support and Dispute Resolution:**
   1. **Outcome:** Addressing customer complaints, disputes, and providing support in real-time.
   2. **Requirement:** An integrated support system with chat, call, and email options, and a protocol for handling disputes between customers and drivers.
9. **Rating and Feedback System:**
   1. **Outcome:** Maintaining service quality through customer and driver ratings.
   2. **Requirement:** A rating system that allows both customers and drivers to leave feedback after each trip, influencing future bookings.
10. **Availability and Dispatching Issues:**
    1. **Outcome:** Ensuring taxis are available during peak hours and in less-served areas.
    2. **Requirement:** A dispatch system that balances demand and supply, potentially using predictive analytics to position taxis in high-demand areas.
11. **Legal and Regulatory Compliance:**
    1. **Outcome:** Ensuring the system complies with local transportation laws, insurance requirements, and data protection regulations.
    2. **Requirement:** Legal review and compliance features, including documentation and audit trails.
12. **Scalability and Performance:**
    1. **Outcome:** Handling high volumes of users and data without performance degradation.
    2. **Requirement:** Scalable architecture that can accommodate growth, with load balancing and failover mechanisms.
13. **Data Privacy and Security:**
    1. **Outcome:** Protecting sensitive customer and driver data from breaches and unauthorized access.
    2. **Requirement:** Encryption, secure authentication methods, and compliance with data protection laws (e.g., GDPR).
14. **User Engagement and Retention:**
    1. **Outcome:** Encouraging customers to return and use the service frequently.
    2. **Requirement:** Loyalty programs, personalized offers, and an easy-to-use interface that enhances user experience.
15. **Multi-language and Localization Support:**
    1. **Outcome:** Catering to diverse customer bases in different regions.
    2. **Requirement:** Support for multiple languages, regional pricing, and local regulatory compliance.

**System Requirements**

**Functional Requirements:**

1. **User Roles & Access Control:**
   * Different access levels for customers, drivers, taxi companies, and administrators.
2. **Registration and Authentication:**
   * User registration via email, phone number, or social media accounts.
   * Driver and company verification process.
3. **Ride Booking Interface:**
   * User-friendly interface for booking rides, setting pick-up and drop-off locations, and viewing estimated fare.
4. **Real-time Notifications:**
   * Push notifications and SMS alerts for booking confirmations, driver arrival, trip start, and trip end.
5. **Payment Gateway Integration:**
   * Support for multiple payment methods and secure transactions.
6. **Admin Dashboard:**
   * Admin panel to manage users, rides, payments, and system settings.
7. **Reporting and Analytics:**
   * Data analytics for ride history, driver performance, revenue, and customer usage patterns.
8. **In-app Messaging and Calling:**
   * Secure communication channels between drivers and customers.

**Non-functional Requirements:**

1. **Scalability:**
   * Ability to handle a large number of concurrent users and transactions.
2. **Performance:**
   * Fast response times, especially during booking and payment processes.
3. **Security:**
   * Compliance with industry standards for data protection and secure transactions.
4. **Reliability:**
   * High availability with minimal downtime and robust disaster recovery mechanisms.
5. **User Experience:**
   * Intuitive and seamless interface design for both mobile and web platforms.
6. **Localization:**
   * Support for multiple languages and regional settings.
7. **Compliance:**
   * Adherence to local transportation, labor, and data privacy regulations.
8. **Maintenance and Support:**
   * Regular updates, bug fixes, and a dedicated support team.