## Web Assignment 3

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## Uber Ride system:

User Authentication and Authorization:

* Utilize OAuth 2.0 or JWT for robust authentication, enabling users to sign in with email/phone and password.
* Establish a role-based authorization system, differentiating access privileges for riders, drivers, and admin users. This ensures restricted access to sensitive functionalities and data.

Geo location and Mapping:

* Utilize GPS data from user devices
* Employ traffic APIs like Google Maps for real-time traffic data.

Ride Matching and Dispatching

This ride matching system uses a smart algorithm and geofencing to find the best driver for each rider, considering distance, traffic, ratings, and preferences. It uses a queuing system to handle multiple requests. Predictive analytics help anticipate demand and allocate resources efficiently.

Real-time Updates and Notifications

* Utilizes push notifications for seamless real-time updates on ride status and driver details.
* Integrated with efficient notification delivery services like Firebase or AWS SNS.
* Utilizes Firebase Cloud Messaging for the delivery of push notifications.
* Notifications include vital details such as driver information, pickup location, and Estimated
* Riders receive continuous updates on the driver's location and ETA throughout the ride.
* System integrates seamlessly with reliable payment gateways like Stripe or PayPal for efficient payment processing.

Scalability and Fault Tolerance:

* Design the system using a distributed microservices architecture to enhance scalability and fault isolation.
* Each service is deployed on multiple servers, ensuring fault tolerance and improved performance.
* Employ cloud-based infrastructure with auto-scaling capabilities to dynamically handle fluctuating traffic and load.

Driver and Rider Ratings:

* Implement a two-way rating system
* Store these ratings in the database for future reference and analysis.

Data Security and Privacy:

* Utilize robust encryption techniques, such as TLS, to safeguard sensitive user data during both transit and storage.