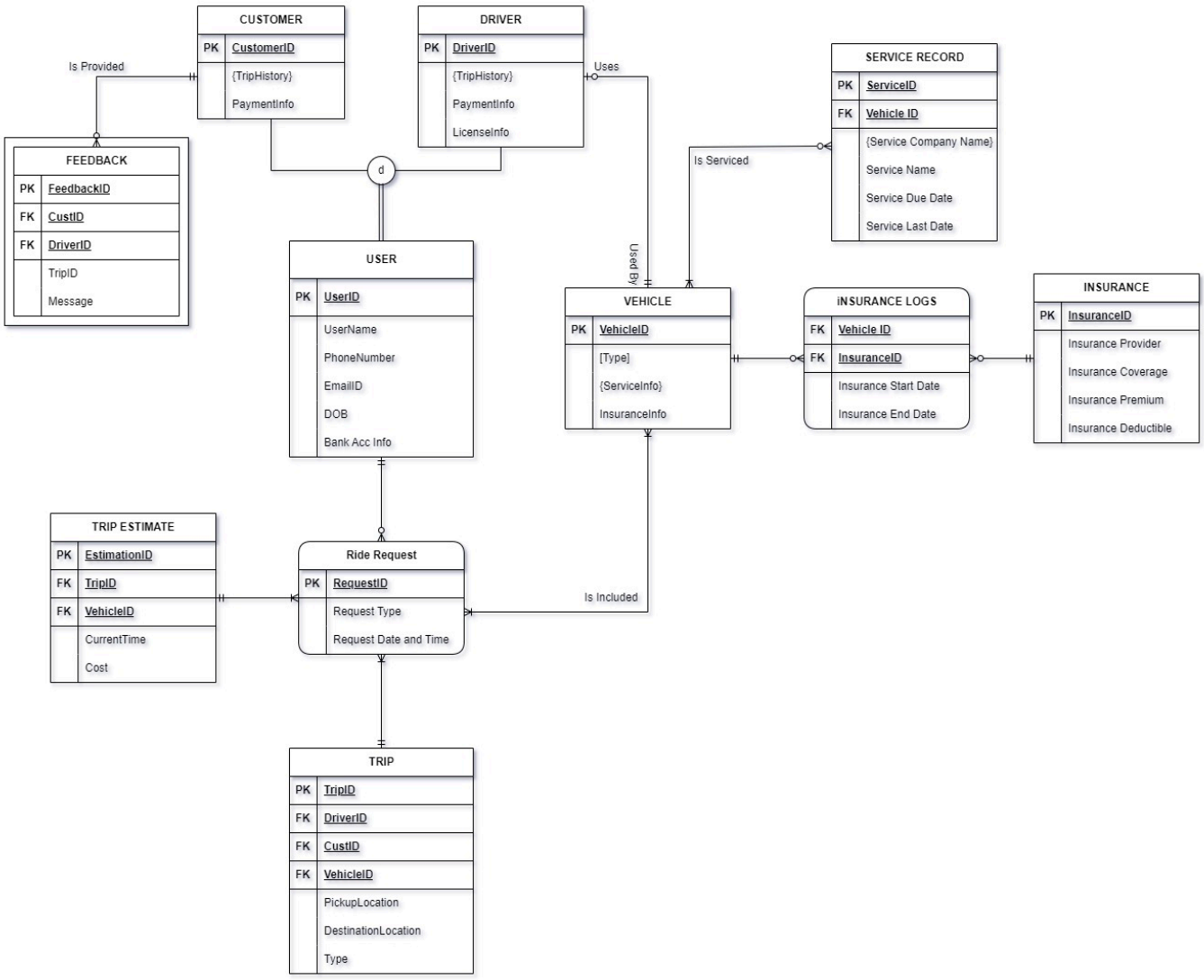
Group 5: P2 Database Design, Initial ERD



From the given ERD and the mission and objectives we had submitted earlier. The following correlations can be drawn:

- For fleet management: We have defined a group of entities for Vehicle, Service Record, and Insurance. The data stored in these entities will help us determine the condition of all vehicles in our fleet, The due dates for their service appointments as well as expiry dates on their insurances. This will assist the management into having a well-oiled operation.
- For Customer satisfaction: To ensure customer satisfaction we have defined a feedback entity. This entity will store data like the particulars of the trip, who the driver was, and what rating was given to the driver by the customer. A database constraint could be added that a driver should maintain a certain satisfaction rating to continue driving with the company.
- For Driver management: To better manage drivers we have defined a driver's entity and have them mapped in relationships with trips and vehicles. This will give us real time tracking as to where the driver currently is, and which trip the driver is currently completing. As we also have feedback from customers this will help us hold the drivers accountable for their quality of service. We could potentially use the feedback to decide on bonuses and rewards for the drivers thus boosting the motivations.

Business Rules:

User is a supertype entity, with subtype Customer and Driver. Customer and Driver cannot be one person at a time hence total specialization and dis-joint is used. Customer has a IS PROVIDED relationship with the weak entity Feedback having cardinality optional to many, because a customer may provide or may not provide feedback. But feedback is only provided by a customer hence the cardinality of IS PROVIDED relationship is mandatory one from feedback to customer. Feedback only exists if a customer exists. Driver has a mandatory one relationship with vehicle because to drive a vehicle a driver is necessary, but other way a vehicle can be assigned to one driver or zero driver hence optional one cardinality is used.

Ride request is an associative entity which has a IS PROVIDED relation with the Vehicle and its cardinality is many to many lower limit of one. This is because when a ride is requested it can associate with many vehicles but at least one and a vehicle is associated in many rides but also at least one. Every requested ride must have a trip estimated cost and hence we can see mandatory one cardinality from ride request to trip estimate, but same trip estimate can be associated with many requested rides at the same time hence we see a mandatory one to many cardinality. At least one to many cardinality is seen from Trip to Ride request because ride request cannot happen without a trip. But every requested ride should have one trip hence we see mandatory one cardinality.

Insurance logs is another associative entity which has a mandatory one cardinality with both Insurance and Vehicle. A vehicle can have zero or many insurance records over the period of time. An Insurance Policy instance can be included in many insurance logs of many vehicle and hence we see an optional many cardinality from Insurance to Insurance Logs. Service Record entity has a mandatory one to many cardinality with vehicle because a instance of a Service Record will at least have one vehicle but can also have many vehicles over the period of time. The vehicle can have zero or more than zero service records hence we see an optional to many cardinality.