UNIVERSITY OF ENGINEERING AND TECHNOLOGY, PESHAWAR

DEPARTMENT OF COMPUTER SYSTEMS ENGINEERING

SPRING 2025

CSE-403L DATABASE MANAGEMENT SYSTEM LAB

KEY MILESTONE 2

Submitted to:

Engr. Sumayya Salahuddin

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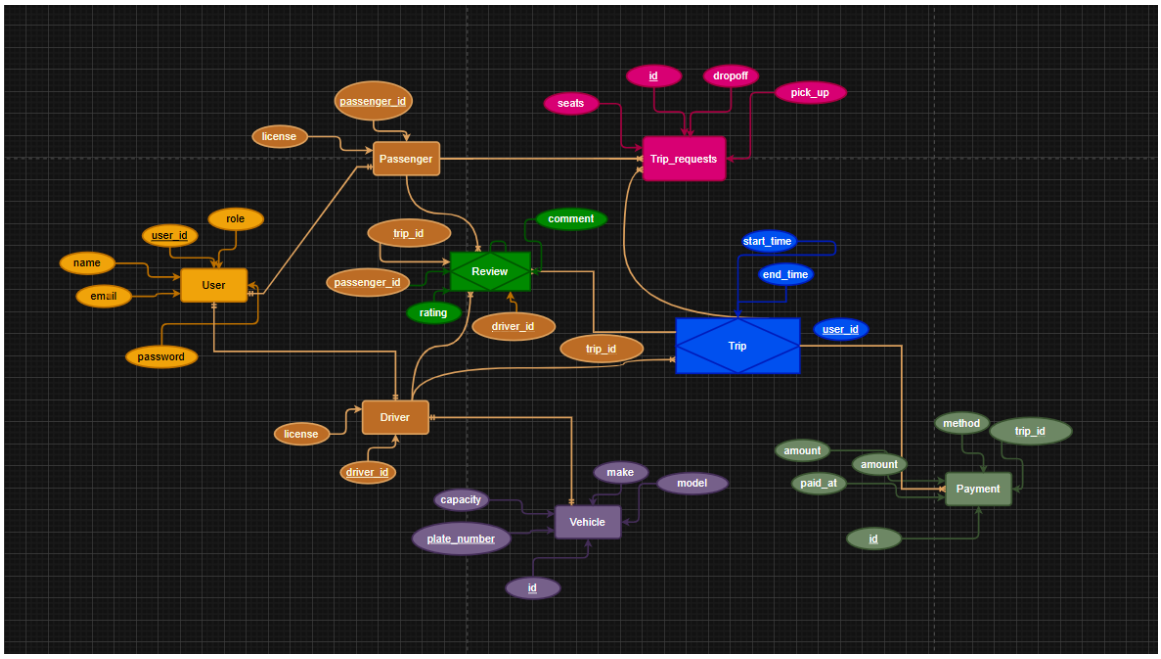
Milestone Prepared By: **Haris Khan (22PWCSE2161)**
Zarrar Ahmed (**22PWCSE2132**)
Muhammad Shafique Qureshi (**22PWCSE2189**)
Section: **A**

1). Converting Conceptual Schema (EER Diagram) to Relational Schema.



Relational Schema:

1. **User**

user_id	name	email	password	role

- User (user_id, name, email, password, role)
- PK: user_id

2. **Passenger**

Passenger_id	license	User_id

- Passenger (passenger_id, license, user_id)
- PK: passenger_id
- FK: user_id references User(user_id) (A passenger is a type of user)

3. **Driver**

Driver_id	license	User_id

- Driver (driver_id, license, user_id)
- PK: driver_id
- FK: user_id references User(user_id) (A driver is a type of user)

4. **Vehicle**

id	make	model	capacity	Plate_number	Driver_id

- Vehicle (id, make, model, capacity, plate_number, driver_id)
- PK: id (Assuming id is the primary key for Vehicle)
- FK: driver_id references Driver(driver_id) (A vehicle is associated with a driver)

5. **Trip_requests**

id	seats	dropoff	Pick_up	Passenger_id

- Trip_requests (id, seats, dropoff, pick_up, passenger_id)
- PK: id
- FK: passenger_id references Passenger(passenger_id) (A passenger makes trip requests)

6. **Trip**

id	Start_time	End_time	User_id	Trip_request	Driver_id

- Trip (id, start_time, end_time, user_id, trip_request_id, driver_id)
- PK: id
- FK: user_id references User(user_id) (Could be the passenger who initiated the trip if distinct from trip_request_id, or just a general user reference)
- FK: trip_request_id references Trip_requests(id) (A trip fulfills a trip request)
- FK: driver_id references Driver(driver_id) (A trip is driven by a driver).

7. **Review**

id	rating	comment	Passenger_id	Driver_id	Trip_id

- `Review (id, rating, comment, passenger_id, driver_id, trip_id)`
- PK: `id`
- FK: `passenger_id` references `Passenger(passenger_id)` (Passenger makes the review)
- FK: `driver_id` references `Driver(driver_id)` (Driver receives the review)
- FK: `trip_id` references `Trip(id)` (Review is for a specific trip)

8. **Payment**

id	amount	Paid_at	method	Trip_id

- `Payment (id, amount, paid_at, method, trip_id)`
- PK: `id`
- FK: `trip_id` references `Trip(id)` (Payment is for a specific trip)

1st normal form:

USERS:

Column Name	Data Type	Constraints
Id	Integer	Primary key
Name	varchar	
Emails	varchar	

Password	varchar	
Created_at	Timestamp	
Updated_at	Timestamp	
Is_passenger	Boolean	
Is_driver	Boolean	
License_number	Varchar	Nullable
Experience_years	Integer	Nullable

VEHICLES:

Column Name	Data Type	Constraints
Id	integer	Primary key
Driver_id	Integer	Foreign key
make	Varchar	
Model	Varchar	
Year	Integer	
Plate_number	Varchar	
capacity	integer	

TRIP_REQUESTS:

Column Name	Data Type	Constraints
Id	integer	Primary key
Passenger_id	integer	Foreign key
Pickup_location	Varchar	
Dropoff_location	Varchar	
Request_time	Timestamp	
Status	Varchar	
seats	Integer	
Estimated_fare	Decimal	

TRIPS:

Column Name	Data Type	Constraints
Id	integer	Primary key
Request_id	integer	Foreign key (TRIP_REQUESTS)
Driver_id	Integer	Foreign key (USERS)
Start_time	Timestamp	
End_time	Timestamp	
Fare	Decimal	
tip	Decimal	

PAYMENTS:

Column Name	Data Type	Constraints
Id	integer	Primary key
Trip_id	integer	Foreign key
Amount	Decimal	
Method	Varchar	

Paid_at	Timestamp	

REVIEWS:

Column Name	Data Type	Constraints
Id	integer	Primary key
Trip_id	integer	Foreign key (TRIPS)
Passenger_id	Integer	Foreign key(USERS)
Driver_id	integer	Foreign key(USERS)
Rating	Integer	
comment	Varchar	

2nd normal form:

USERS:

Column Name	Data Type	Constraints
Id	integer	Primary key
Name	varchar	
Email	Varchar	
Password	varchar	
Created_at	Timestamp	
Updated_at	Timestamp	

PASSENGERS:

Column Name	Data Type	Constraints
Id	integer	Primary key, Foreign key (USERS)

DRIVERS:

Column Name	Data Type	Constraints
Id	integer	Primary key, Foreign key(USERS)
License_number	varchar	
Experience_years	Integer	

VEHICLES:

Column Name	Data Type	Constraints
Id	integer	Primary key
Driver_id	integer	Foreign key (DRIVERS)
Make	Varchar	
Model	Varchar	
Year	Integer	
Plate_number	Varchar	
capacity	Integer	

TRIP_REQUESTS:

Column Name	Data Type	Constraints
Id	integer	Primary key
Passenger_id	integer	Foreign key (PASSENGERS)
Pickup_location	Varchar	
Dropoff_location	Varchar	
Request_time	Timestamp	
Status	Varchar	
Seats	Integer	
Estimated_fare	Decimal	

TRIPS:

Column Name	Data Type	Constraints
Request_id	integer	Primary key, foreign key(TRIP_REQUESTS)
Driver_id	integer	Primary key, foreign key(DRIVERS)
Start_time	Timestamp	
End_time	Timestamp	
Fare	Decimal	
tip	Decimal	

PAYEMENT:

Column Name	Data Type	Constraints
Id	integer	Primary key
Request_id	integer	Foreign key
Driver_id	Integer	Foreign key
Amount	Decimal	
Method	Varchar	
Paid_at	Timestamp	

REVIEWS:

Column Name	Data Type	Constraints
Id	integer	Primary key
Request_id	integer	Foreign key
Driver_id	integer	Foreign key
Passenger_id	Integer	Foreign key
Rating	Integer	
comment	Varchar	

Relational Schema (3NF):

USERS:

Column Name	Data Type	Constraints
Id	integer	Primary key
name	varchar	
Email	Varchar	
Password	Varchar	
Created_at	Timestamp	
Updated_at	Timestamp	

PASSENGERS:

Column Name	Data Type	Constraints
Id	integer	Primary key,foreign key ->(id)

DRIVERS:

Column Name	Data Type	Constraints
Id	integer	Primary key, foreign key->(id)
License_number	varchar	
Experience_years	Integer	

VEHICLES:

Column Name	Data Type	Constraints
Id	integer	Primary key
Driver_id	integer	Foreign key DRIVERS (id)
make	Varchar	
Model	Varchar	
Year	Integer	
Plate_number	Varchar	
capacity	Integer	

TRIP_REQUESTS:

Column Name	Data Type	Constraints
Id	integer	Primary key
Passenger_id	integer	Foreign key PASSENGER(id)
Pickup_location	Varchar	
Dropoff_location	Varchar	
Request_time	Timestamp	
Status	Varchar	
Seats	Integer	
Estimated_fare	Decimal	

TRIPS:

Column Name	Data Type	Constraints
Id	integer	Primary key
Request_id	integer	Primary key
Driver_id	Integer	Foreign key TRIP_REQUESTS(id)
Start_time	timestamp	Foreign key DRIVERS (id)
End_time	Timestamp	
Fare	Decimal	
tip	Decimal	

PAYEMENTS:

Column Name	Data Type	Constraints
Id	integer	Primary key
Trip_id	integer	Foreign key TRIPS (id)
Amount	Decimal	
Method	Varchar	
Paid_at	Timestamp	

REVIEWS:

Column Name	Data Type	Constraints
Id	integer	Primary key
Trip_id	integer	Foreign key TRIPS (id)
Passenger_id	Integer	Foreign key PASSENGER (id)
Driver_id	Integer	Foreign key DRIVERS (id)
Rating	Integer	
comment	Varchar	

References:

https://gemini.google.com/
https://github.com/