

IST 659

Car Rental Management System

Final Project Report

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Car Rental Management System

Project Summary:

While thinking about the idea of the project, I came across a problem that I faced myself while booking a rental car. I came across various car rental comparisons' websites, but those websites just included major brands for car rentals i.e. Enterprise, Alamo, Rent a car etc. I had to individually search for local and cheap car rentals that fit my budget. This incident arose my interest to formulate a system that allows its users to compare and book rentals at the best rate possible. I also try my best to include luxury cars in the system that allows users to book car according to their requirements and flexibilities.

For the above-mentioned reasons, I decided to construct a system that allows:

1. Users to compare and book rentals
2. Car rental organizations to participate in the system to improve their market share
3. Admin to monitor customers' trips and feedbacks to keep on improvising the system

Designed System:

The system formulated allows users to query the database based on the vehicle they want, their budget and number of travelers for the trip. The system the gives the list of vehicles available, the organization hosting the vehicle, availability of vehicle and the cost of the vehicle. The system also generates various forms and reports when Admin or Customers query the database. Admin has all the system rights to add, modify, delete data in the system. On the other hand, customers are only allowed to access limited part of the database, just for viewing their own trip history and details.

Car rental organizations providing rentals are added into the database by the admin, which allows admin to keep track of number of vehicles available and booked from different organizations. The final database is normalized until 3NF form which ensures that the database does not have any partial or transitive dependencies. For this system, I have used required attributes wherever necessary, that allows the data in the system to be consistent. The admin can also query about the entire trip history and the system generates a report to display it.

The tables are created using SQL Server and then connected to MS – Access, where User Interface, Forms and Reports are generated. Minimal part of dummy data is inserted using 'insert' statement in SQL Server, rest data is directly added in tables connected via MS-Access. This makes it easy for the admin to insert vast amounts of data into tables. A customer can always know his/her number of trips/feedbacks given by querying the database and the result obtained is by using 'aggregate' function.

Entity and Attributes Glossary:

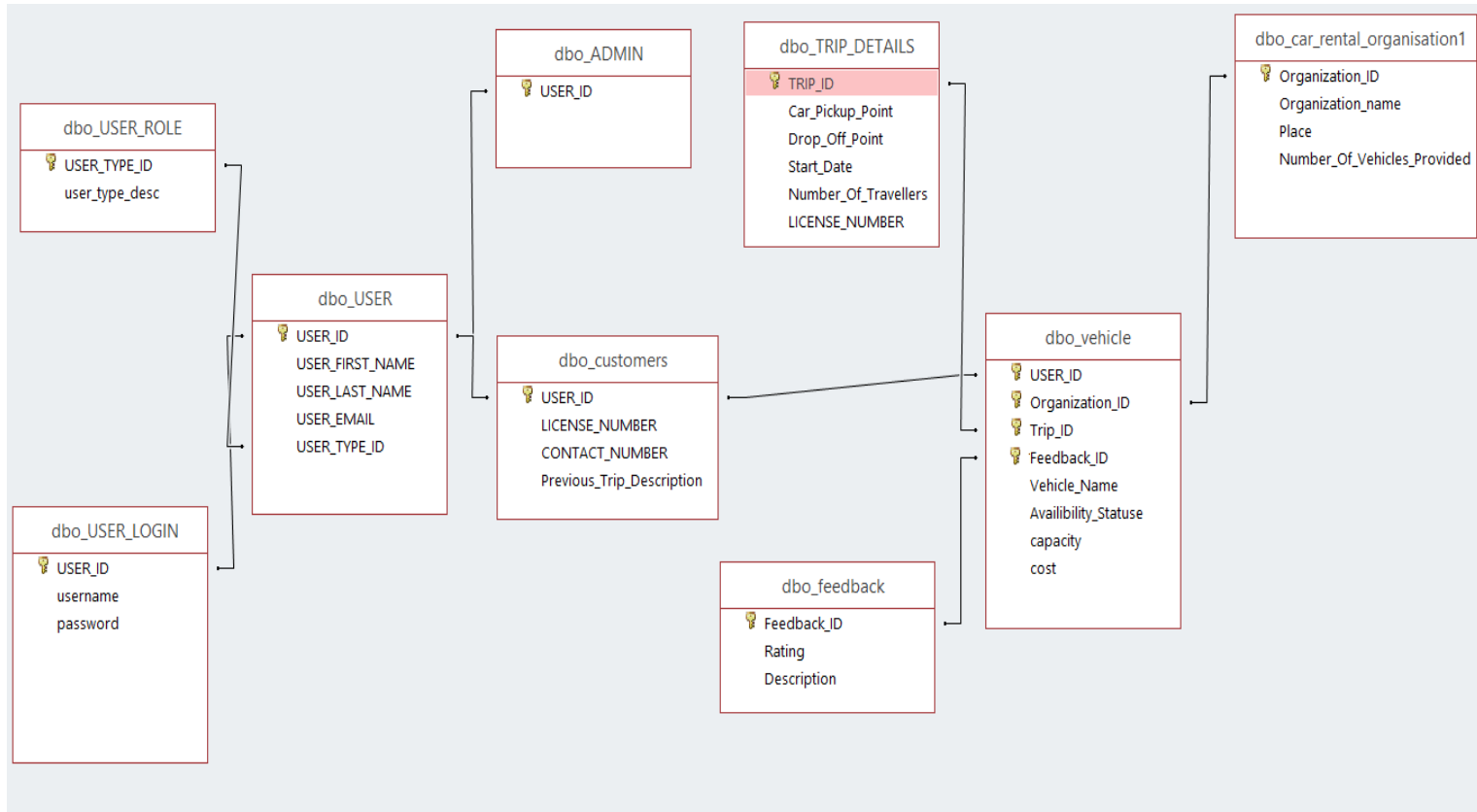
| | |
|--|---|
| USER_ROLE USER_TYPE_ID (PK) User_type_desc | This table contains role description of user i.e. if a user is ADMIN or Customer This field contains 2 values, 1 or 2 1 stands for admin, 2 for customer This defines role of the user |
| USER_LOGIN USER_ID Username Password | This stores the login information of user Unique identifiers of all users of the system Used to store username of users Used to store password of users(encrypted) |
| USER USER_ID (PK) USER_FIRST_NAME USER_LAST_NAME USER_EMAIL USER_TYPE_ID | This table stores information of all users that may be admin or customers Unique identifiers of all users of the system First name of the user Last name of the user Email address of the user To determine if the user is Admin or Customer |
| ADMIN USER_ID(FK) | This table stores the admin information Unique identifiers of admin of the system |
| CUSTOMERS USER_ID(FK) License_Number | This stores information of all customers of the system Unique identifiers of all customers of the system License number of the customers booking the rentals |

| | |
|--------------------------------|---|
| Contact_Number | Contact number of customers |
| Previous_Trip_Description | Description of the previous trip |
| TRIP_DETAILS | This table contains trip details of the customers |
| TRIP_ID(PK) | Unique trip identifiers |
| Car_Pickup_Point | The point from where the car was picked up |
| Car_Dropoff_Point | The point from where the car was dropped off |
| Start Date | The date when the trip started |
| Number_Of_Travellers | The number of travelers in the trip |
| Car_Rental_Organization | This table contains information of organization that are providing rentals for the system |
| Organization_ID | Unique identifier of companies |
| Organization_Name | Name of the organization |
| Place | Place where the organization resides |
| No_Of_Vehicles_Provided | Number of vehicles provided by the organization |
| Feedback | This table contains information about the feedback provided by customers |
| Feedback_ID | Unique identifier of feedback |
| Rating | Rating given by customers (1-5) |
| Description | Description of the feedback |
| Vehicle | This table contains the rental information for which the customer is looking for |

| | |
|---------------------|--|
| Organization_ID(FK) | Foreign key from car rental org |
| Trip_ID(FK) | Unique trip id from TRIP_DETAILS table |
| User_ID(FK) | Unique used id of users |
| Feedback_ID(FK) | Feedback id from Feedback table |
| Vehicle_Name | Vehicle name in the database |
| Availability_Status | If the vehicle is available or not |
| Capacity | Capacity of the vehicle |
| Cost | Cost of the vehicle |

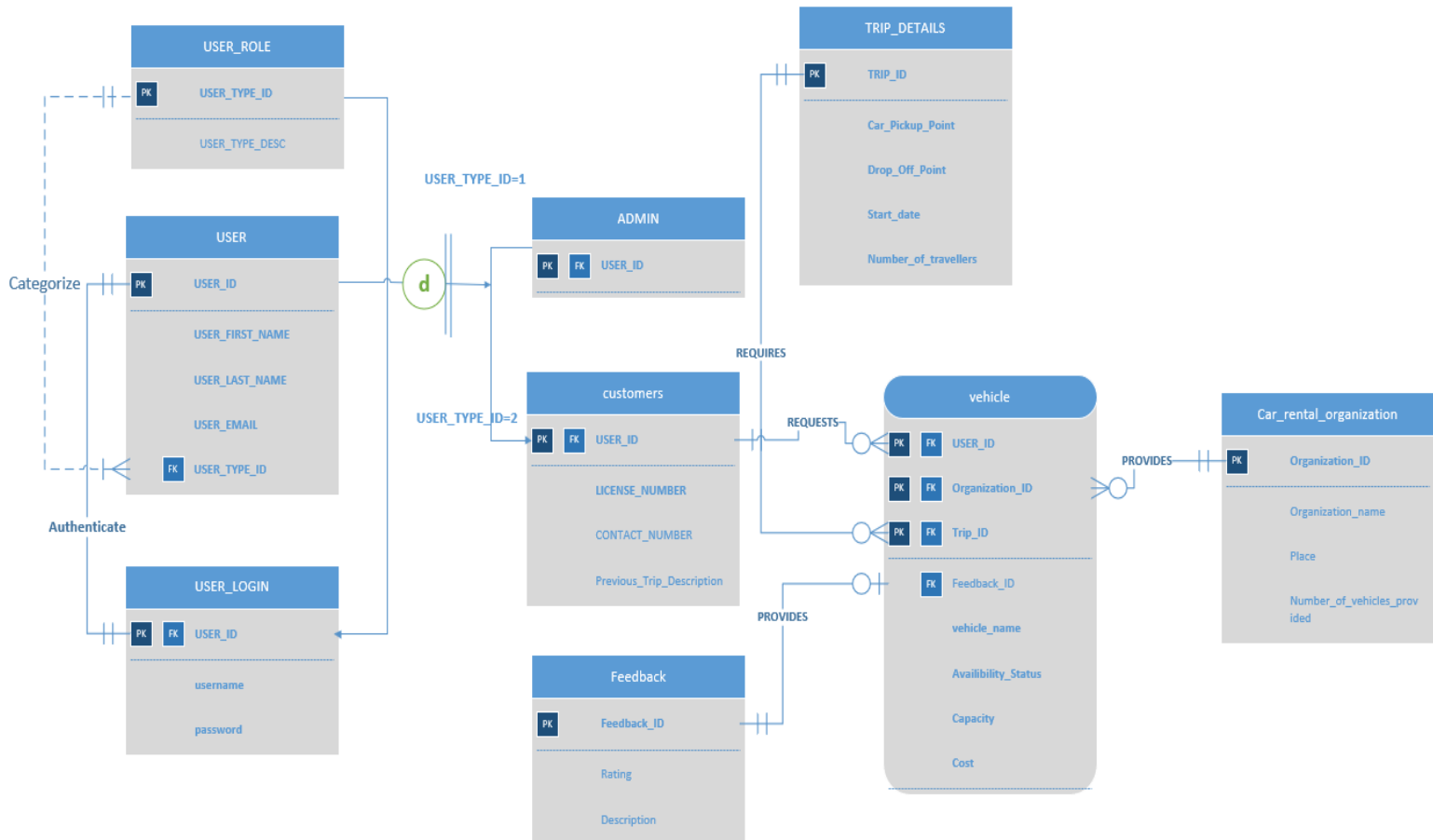
Relationship Model:

1. MS – Access



NOTE: Both the models are updates according to final draft of the project. All the entities in the tables are straightforward according to their names. Also, the correction in Visio diagram of not defining Feedback_ID as foreign key in vehicle is corrected.

2. MS Visio



SQL Script for creating tables:

```
CREATE TABLE [dbo].[USER_ROLE](
    [USER_TYPE_ID] [int] NOT NULL,
    [user_type_desc] [char](20),
    constraint USER_TYPE_ID_pk PRIMARY KEY(USER_TYPE_ID)
);
create table [USER]
(
    USER_ID int not null,
    USER_FIRST_NAME varchar(20) not null,
    USER_LAST_NAME varchar(20) not null,
    USER_EMAIL varchar(20) not null,
    USER_TYPE_ID int not null,
    constraint USER_ID_pk primary key(USER_ID),
    constraint USER_TYPE_ID_fk foreign key(USER_TYPE_ID) references USER_ROLE(USER_TYPE_ID)
);
```



```
create table USER_LOGIN
(
  USER_ID int not null,
  username varchar(20) not null,
  password varchar(20) not null,
  constraint USER_ID_pk5 primary key(USER_ID),
  constraint USER_ID_fk5 foreign key(USER_ID) references [USER](USER_ID)
);

create table ADMIN
(
  USER_ID int not null,
  constraint USER_ID_pk1 primary key(USER_ID),
  constraint USER_ID_fk1 foreign key(USER_ID) references [USER](USER_ID)
);

create table customers
(
  USER_ID int not null,
  LICENSE_NUMBER varchar(20) not null,
  CONTACT_NUMBER int,
  Previous_Trip_Description varchar(50),
  constraint USER_ID_pk2 primary key(USER_ID),
  constraint USER_ID_fk2 foreign key(USER_ID) references [USER](USER_ID)
);

create table feedback
(
  [Feedback_ID] [int] NOT NULL,
  [Rating] [int],
  [Description] [varchar](50),
  constraint USER_ID_pk3 primary key(Feedback_ID)
);

create table car_rental_organisation1
(
  Organisation_ID int not null,
  Organisation_name varchar(20),
  Place varchar(20),
  Number_Of_Vehicles_Provided int,
  constraint Organisation_ID_pk primary key(Organisation_ID)
);

create table TRIP_DETAILS
(
  TRIP_ID int not null,
  Car_Pickup_Point varchar(20) not null,
  Drop_Off_Point varchar(20) not null,
  Start_Date date not null,
  Number_Of_Travellers int not null,
  constraint TRIP_ID_pk primary key(TRIP_ID)
);

create table vehicle
(
  USER_ID int not null,
  Organization_ID int not null,
  Trip_ID int not null,
  Feedback_ID int,
  Vehicle_Name varchar(20) not null,
  Availability_Status varchar(20) not null,
  capacity int not null,
```

```

cost int not null,
constraint USER_ID_pk4 primary key(USER_ID, Organization_ID, TRIP_ID),
constraint USER_ID_fk4 foreign key(USER_ID) references [USER](USER_ID),
constraint Organization_ID_fk3 foreign key(Organization_ID) references
[car_rental_organisation1](Organization_ID),
constraint TRIP_ID_fk foreign key(TRIP_ID) references TRIP_DETAILS(TRIP_ID),
constraint Feedback_ID_fk foreign key(Feedback_ID) references feedback(Feedback_ID)
);

alter table vehicle
add constraint Feedback_ID_fk foreign key([Feedback_ID]) references
feedback([Feedback_ID])

```

SQL Script for inserting values:

NOTE: The values here inserted are not enough for the database, these are just examples. Bulk values are added using MS Access, which are refreshed in SQL Server

TABLE USER_ROLE

```

insert into USER_ROLE values(1, 'Admin')
insert into USER_ROLE values(2, 'Customers')

```

TABLE USER:

```

insert into [USER] values(65432, 'Neha', 'Farheen', 'farheen@gmail.com', 2)
insert into [USER] values(65431, 'Sneha', 'Blarheen', 'Blarheen@gmail.com', 2)
insert into [USER] values(65433, 'Snehal', 'Fardeen', 'fardeen@gmail.com', 2)

```

TABLE USER_LOGIN:

```

insert into USER_LOGIN values(65432, 'gurleendua', 'gurl12345')
insert into USER_LOGIN values(65431, 'snehablarheen', 'sneha12345')
insert into USER_LOGIN values(65433, 'snehalfardeen', 'sneha123452')

```

TABLE ADMIN:

```

insert into ADMIN(12340)

```

TABLE customers:

```

insert into customers values(65432, 'FAR12345', '647328647', 'Great job')
insert into customers values(65431, 'SAR12345', '647322347', 'Great job')
insert into customers values(65432, 'ZAR12345', '647231647', 'Great job')

```

TABLE feedback:

```

insert into feedback values(00001, 5, 'Great job')
insert into feedback values(00002, 4, 'satisfied')

```

```
insert into feedback values(00003,3,'Moderate')
```

TABLE car_rental_organisation1:

```
insert into car_rental_organisation1 values(99991,'Pranay Rentals','Syracuse',100)
insert into car_rental_organisation1 values(99992,'Ritesh Rentals','NYC',90)
insert into car_rental_organisation1 values(99993,'Romil Rentals','Las Vegas',100)
```

TABLE TRIP_DETAILS:

```
insert into TRIP_DETAILS values(88881,'Syracuse','New york city','08-09-2017',6)
insert into TRIP_DETAILS values(88882,'New York City','Syracuse','02-09-2017',5)
insert into TRIP_DETAILS values(88883,'New Jersey','New york city','08-01-2017',4)
```

TABLE vehicle:

```
insert into vehicle values(65432,99991,88881,00001,'i20','yes',6,60)
insert into vehicle values(65431,99992,88882,00002,'Bugatti','yes',6,200)
insert into vehicle values(65433,99993,88883,00003,'Mercedes','yes',6,120)
```

MAJOR DATA QUESTIONS:

1. How many trips have been made in history and to view all trip details of those trips
2. To view trips based on USER_IDs
3. How many trips a customer has made (aggregate function)
4. What are the feedbacks that the customers gave?
5. What car rentals are available when the customer queries the database based on car name, budget and number of travelers?
6. Which organization provides which and how many of those vehicles?

1. How many trips have been made in history and to view all trip details of those trips

Solution:

SQL SCRIPT:

```
SELECT [customers].[USER_ID],[customers].[LICENSE_NUMBER],
[customers].[CONTACT_NUMBER],[customers].[Previous_trip_description],
[USER].[USER_FIRST_NAME],
[USER].[USER_LAST_NAME],[USER].[USER_EMAIL],[TRIP_DETAILS].[TRIP_ID],[TRIP_DETAILS].[Car_
Pickup_Point],[TRIP_DETAILS].[Drop_off_point],[TRIP_DETAILS].[Start_Date],[TRIP_DETAILS].
[Number_Of_Travellers],[vehicle].[Vehicle_Name],[vehicle].[capacity],[vehicle].[cost]
FROM TRIP_DETAILS INNER JOIN (([USER] INNER JOIN customers ON [USER].[USER_ID]
=[customers].[USER_ID]) INNER JOIN vehicle ON [customers].[USER_ID] =[vehicle].[USER_ID])
ON [TRIP_DETAILS].[TRIP_ID] =[vehicle].[TRIP_ID];
```

OUTPUT:

| | USER_ID | LICENSE_NUMBER | CONTACT_NUMBER | Previous_trip_description | USER_FIRST_NAME | USER_LAST_NAME | USER_EMAIL | TRIP_ID | Car_Pickup_Point | Drop_off_point | Start_Date | Number_Of_Travellers | Vehicle_Name | capacity | cost |
|----|---------|----------------|----------------|---------------------------|-----------------|----------------|--------------------|---------|--------------------|----------------|------------|----------------------|--------------|----------|------|
| 1 | 12341 | MARK12345 | 999922221 | NULL | Mark | Zuckerburg | markbhai@syr.edu | 22221 | Syracuse | New york city | 2018-01-01 | 5 | i20 | 6 | 40 |
| 2 | 12341 | MARK12345 | 999922221 | NULL | Mark | Zuckerburg | markbhai@syr.edu | 22222 | New York | Syracuse | 2018-02-02 | 4 | jeep | 6 | 100 |
| 3 | 12342 | Don12345 | 999911119 | NULL | Donald | Trump | trumpbhai@syr.edu | 22222 | New York | Syracuse | 2018-02-02 | 4 | hyundai | 4 | 30 |
| 4 | 12343 | MONT12345 | 238921739 | NULL | Monty | Lulla | lullabhai@syr.edu | 22223 | Las vegas | Syracuse | 2018-03-03 | 6 | maruti 800 | 4 | 70 |
| 5 | 12344 | MAGG12345 | 718321738 | NULL | maggu | bhai | maggubhai@syr.edu | 22224 | syracuse | las vegas | 2018-04-04 | 6 | bugatti | 2 | 150 |
| 6 | 12345 | RITS12345 | 891323904 | NULL | ritesh | dhakad | dhakadbhai@syr.edu | 22225 | new jersey | new york city | 2017-01-01 | 6 | innova | 5 | 80 |
| 7 | 12346 | SOR12345 | 189490233 | NULL | sorabh | gupta | guptabhai@syr.edu | 22226 | jersey | las vegas | 2017-10-10 | 4 | i20 | 4 | 120 |
| 8 | 12346 | SOR12345 | 189490233 | NULL | sorabh | gupta | guptabhai@syr.edu | 22224 | syracuse | las vegas | 2018-04-04 | 6 | yamaha | 6 | 90 |
| 9 | 12346 | SOR12345 | 189490233 | NULL | sorabh | gupta | guptabhai@syr.edu | 22221 | Syracuse | New york city | 2018-01-01 | 5 | omni | 6 | 70 |
| 10 | 12347 | NIGGA12345 | 328942744 | NULL | vaibhav | nigam | nigambhai@syr.edu | 22224 | syracuse | las vegas | 2018-04-04 | 6 | aston martin | 2 | 190 |
| 11 | 98765 | far123 | 283791292 | COOL | farheen | safoora | far123@syr.edu | 22226 | jersey | las vegas | 2017-10-10 | 4 | i20 | 4 | 80 |
| 12 | 98766 | GUR123 | 812973892 | NICE | gurleen | dua | gurleen@syr.edu | 22227 | las vegas | jersey | 2017-11-11 | 4 | i20 | 4 | 90 |
| 13 | 98767 | SAN12345 | 893479233 | LAME | Sanjay | Banthia | banth@syr.edu | 22228 | world trade centre | syracuse | 2017-09-08 | 4 | i20 | 4 | 100 |
| 14 | 98768 | SAURABH12345 | 234789232 | SATISFIED | Saurabh | Gupta | sau@syr.edu | 22229 | syracuse | atlanta | 2017-09-07 | 4 | i20 | 4 | 110 |
| 15 | 98769 | YUN HUANG | 999999999 | Very Good Experience | Yun | Huang | huang@syr.edu | 22220 | atlanta | syracuse | 2017-05-05 | 4 | i20 | 4 | 140 |

2. To view trips based on USER_IDs

SQL Script:

```
SELECT [USER].USER_ID, [USER].USER_FIRST_NAME, [USER].USER_LAST_NAME,
customers.LICENSE_NUMBER, TRIP_DETAILS.Car_Pickup_Point,
TRIP_DETAILS.Drop_Off_Point, TRIP_DETAILS.Number_Of_Travellers FROM
TRIP_DETAILS INNER JOIN ([USER] INNER JOIN customers ON [USER].USER_ID =
customers.USER_ID) INNER JOIN vehicle ON customers.USER_ID = vehicle.USER_ID)
ON TRIP_DETAILS.Trip_ID = vehicle.Trip_ID WHERE ((([USER].USER_ID)=12346));
```

OUTPUT:

| | USER_ID | USER_FIRST_NAME | USER_LAST_NAME | LICENSE_NUMBER | Car_Pickup_Point | Drop_Off_Point | Number_Of_Travellers |
|---|---------|-----------------|----------------|----------------|------------------|----------------|----------------------|
| 1 | 12346 | sorabh | gupta | SOR12345 | jersey | las vegas | 4 |
| 2 | 12346 | sorabh | gupta | SOR12345 | syracuse | las vegas | 6 |
| 3 | 12346 | sorabh | gupta | SOR12345 | Syracuse | New york city | 5 |

3. How many trips a customer has made (aggregate function)?

SQL Script:

```
SELECT vehicle.USER_ID, Count(vehicle.Trip_ID) AS CountOfTRIP_ID
FROM TRIP_DETAILS INNER JOIN (customers INNER JOIN vehicle ON
customers.USER_ID = vehicle.USER_ID) ON TRIP_DETAILS.Trip_ID = vehicle.Trip_ID
GROUP BY vehicle.USER_ID
HAVING (((vehicle.USER_ID)=12346));
```

OUTPUT:

| | USER_ID | CountOfTRIP_ID |
|---|---------|----------------|
| 1 | 12346 | 3 |

4. What are the feedbacks that customers gave?

SQL Script:

```
SELECT vehicle.USER_ID, feedback.Feedback_ID, feedback.Rating, feedback.Description
FROM vehicle INNER JOIN feedback ON vehicle.Feedback_ID = feedback.Feedback_ID
WHERE (((vehicle.USER_ID)=12346));
```

Output:

| | USER_ID | Feedback_ID | Rating | Description |
|---|---------|-------------|--------|-------------|
| 1 | 12346 | 23450 | 1 | not good |
| 2 | 12346 | 23456 | 3 | Moderate |
| 3 | 12346 | 23456 | 3 | Moderate |

5. What car rentals are available when the customer queries the database based on car name, budget and number of travelers?

SQL Script:

```
SELECT car_rental_organisation1.Organization_ID,
car_rental_organisation1.organization_Name, vehicle.Vehicle_Name,
vehicle.Availability_Stature, vehicle.capacity, vehicle.cost
FROM car_rental_organisation1 INNER JOIN vehicle ON
car_rental_organisation1.Organization_ID = vehicle.Organization_ID
WHERE (((vehicle.Vehicle_Name)= 'i20') And ((vehicle.capacity)=6) And
((vehicle.cost)<=200))
ORDER BY vehicle.cost;
```

Output:

| | Organization_ID | organization_Name | Vehicle_Name | Availability_Stature | capacity | cost |
|---|-----------------|-------------------|--------------|----------------------|----------|------|
| 1 | 33332 | Alamo | i20 | yes | 6 | 40 |
| 2 | 33331 | Enterprise | i20 | yes | 6 | 50 |

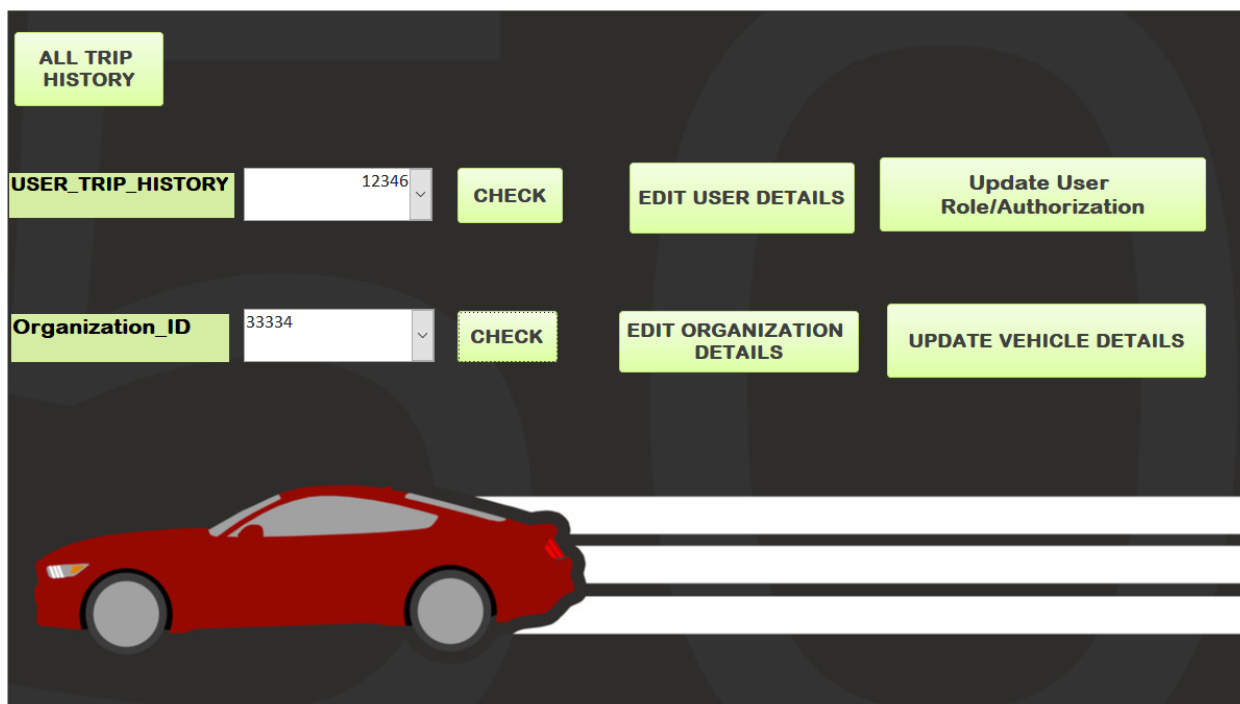
6. Which organization provides which and how many of those vehicles?

SQL Script:

```
SELECT car_rental_organisation1.Organization_ID,
car_rental_organisation1.Organization_name, car_rental_organisation1.Place,
car_rental_organisation1.Number_Of_Vehicles_Provided, vehicle.Vehicle_Name,
vehicle.capacity, vehicle.cost
FROM car_rental_organisation1 INNER JOIN vehicle ON
car_rental_organisation1.Organization_ID = vehicle.Organization_ID
WHERE (((car_rental_organisation1.Organization_ID)=33334));
```

Output:

| Results Messages | | | | | | | |
|------------------|-----------------|-------------------|----------|-----------------------------|--------------|----------|------|
| | Organization_ID | Organization_name | Place | Number_Of_Vehicles_Provided | Vehicle_Name | capacity | cost |
| 1 | 33334 | Monty Rentals | Syracuse | 150 | maruti 800 | 4 | 70 |
| 2 | 33334 | Monty Rentals | Syracuse | 150 | i20 | 4 | 100 |

Interfaces:**1. Admin Access Form**

The Admin Access Form interface features a dark background with a red sports car illustration at the bottom. It includes a navigation button labeled "ALL TRIP HISTORY". Below this, there are two main sections for user and organization management. The first section, labeled "USER_TRIP_HISTORY", contains a dropdown menu with the value "12346", a "CHECK" button, and two larger buttons: "EDIT USER DETAILS" and "Update User Role/Authorization". The second section, labeled "Organization_ID", contains a dropdown menu with the value "33334", a "CHECK" button, and two larger buttons: "EDIT ORGANIZATION DETAILS" and "UPDATE VEHICLE DETAILS".

When the admin clicks on ALL TRIP HISTORY button, following report is generated

| All Rental History | | | | | | | | | | | | | Return |
|--------------------|------------|---------|----------------|-----------|------------|-------------------|---------|-------------|----------------|------------|------------------|-------------|----------|
| USER_ID | LICENSE | CONTACT | Previous_trip | FIRSTNAME | LASTNAME | EMAIL | TRIP_ID | Car_Pickup | Drop_off_point | Date | No_Of_Travellers | Vehicle | capacity |
| 12341 | MARK12345 | ##### | | Mark | Zuckerburg | markbhai@syr.edu | 22221 | Syracuse | New york city | 2018-01-01 | 5 | i20 | 6 |
| | | | | | | | 22222 | New York | Syracuse | 2018-02-02 | 4 | jeep | 6 |
| 12342 | Don12345 | ##### | | Donald | Trump | trumpbhai@syr.ec | 22222 | New York | Syracuse | 2018-02-02 | 4 | hyundai | 4 |
| 12343 | MONT12345 | ##### | | Monty | Lulla | lullabhai@syr.edu | 22223 | Las vegas | Syracuse | 2018-03-03 | 6 | maruti 800 | 4 |
| 12344 | MAGG12345 | ##### | | maggu | bhai | maggubhai@syr.e | 22224 | syracuse | las vegas | 2018-04-04 | 6 | bugatti | 2 |
| 12345 | RITS12345 | ##### | | ritesh | dhakad | dhakadbhai@syr.e | 22225 | new jersey | new york city | 2017-01-01 | 6 | innova | 5 |
| 12346 | SOR12345 | ##### | | sorabh | gupta | guptabhai@syr.ed | 22221 | Syracuse | New york city | 2018-01-01 | 5 | omni | 6 |
| | | | | | | | 22224 | syracuse | las vegas | 2018-04-04 | 6 | yamaha | 6 |
| | | | | | | | 22226 | jersey | las vegas | 2017-10-10 | 4 | i20 | 4 |
| 12347 | NIGGA12345 | ##### | | vaibhav | nigam | nigambhai@syr.ec | 22224 | syracuse | las vegas | 2018-04-04 | 6 | aston marti | 2 |
| 98765 | far123 | ##### | COOL | farheen | safoora | far123@syr.edu | 22226 | jersey | las vegas | 2017-10-10 | 4 | i20 | 4 |
| 98766 | GUR123 | ##### | NICE | gurleen | dua | gurleen@syr.edu | 22227 | las vegas | jersey | 2017-11-11 | 4 | i20 | 4 |
| 98767 | SAN12345 | ##### | LAME | Sanjay | Banthia | banth@syr.edu | 22228 | world trade | syracuse | 2017-09-08 | 4 | i20 | 4 |
| 98768 | SAURABH12 | ##### | SATISFIED | Saurabh | Gupta | sau@syr.edu | 22229 | syracuse | atlanta | 2017-09-07 | 4 | i20 | 4 |
| 98769 | YUN HUANG | ##### | Very Good Expe | Yun | Huang | huang@syr.edu | 22220 | atlanta | syracuse | 2017-05-05 | 4 | i20 | 4 |

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When the admin clicks on 12346 from the drop-down list of combo box, following form is generated

Useridreport

| USER_ID | FIRSTNAME | LASTNAME | LICENSE_NUMBER | Car_Pickup_Point | Drop_Off_Point | Number_Of_Travellers |
|---------|-----------|------------|----------------|------------------|----------------|----------------------|
| 12341 | Mark | Zuckerburg | MARK12345 | New York | Syracuse | 4 |

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Similarly, for Organization_ID Drop down, such report is created. The admin also has rights to add/update/delete user or organization details as well.

2. User Access Form

CHECK YOUR TRIP COUNT

ENTER YOUR USER_ID FOR PREVIOUS TRIPS

12346

SUBMIT

SELECT VEHICLE

i20

SELECT CAPACITY

6

ENTER BUDGET


200

ENTER YOUR USER_ID FOR PREVIOUS FEEDBACKS

12346

CHECK

SUBMIT



After inserting values for Select Vehicle, select capacity, Enter Budget following form pops up that helps the customer to decide which car to book.

| VEHICLES_AVAILABLE | | | | | |
|--------------------|-------------------|--------------|---------------------|----------|------|
| | | | | RETURN | |
| Organization_ID | organization_Name | Vehicle_Name | Availability_status | capacity | cost |
| 33332 | Alamo | i20 | yes | 6 | 40 |
| 33331 | Enterprise | i20 | yes | 6 | 50 |

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Similarly, if the customer wants to check his/her trip count, previous trip details, previous feedbacks below forms and reports are generated.

1.

Previous Next RETURN

| | |
|----------------------|---|
| USER_ID | <input type="text" value="12346"/> |
| LICENSE_NUMBER | <input type="text" value="SOR12345"/> |
| CONTACT_NUMBER | <input type="text" value="189490233"/> |
| TRIP_ID | <input type="text" value="22226"/> |
| Organization_ID | <input type="text" value="33331"/> |
| Car_Pickup_Point | <input type="text" value="jersey"/> |
| Drop_off_point | <input type="text" value="las vegas"/> |
| Number_Of_Travellers | <input type="text" value="4"/> |
| Start_Date | <input type="text" value="2017-10-10"/> |
| Vehicle_Name | <input type="text" value="i20"/> |
| cost | <input type="text" value="120"/> |

2.

| USER_ID | CountOfTRIP_ID |
|---------|----------------|
| 12346 | 3 |

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3.

| FEEDBACK_FORM | | | |
|------------------------------------|------------------------------------|--------------------------------|---------------------------------------|
| USER_ID | Feedback_ID | Rating | Description |
| <input type="text" value="12346"/> | <input type="text" value="23450"/> | <input type="text" value="1"/> | <input type="text" value="not good"/> |
| <input type="text" value="12346"/> | <input type="text" value="23456"/> | <input type="text" value="3"/> | <input type="text" value="Moderate"/> |
| <input type="text" value="12346"/> | <input type="text" value="23456"/> | <input type="text" value="3"/> | <input type="text" value="Moderate"/> |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

Trigger:

As I moved ahead with the database creation, I realized that I had to link license number with trip details to create an insightful database. This problem was solved using trigger. The trigger here has two inner joins and is optimized as well. The script is given below:

```

create trigger
ADD_LICENSE2
on customers
for insert,update as
if @@ROWCOUNT >= 1
begin
update TRIP_DETAILS
SET LICENSE_NUMBER=inserted.LICENSE_NUMBER
from
(
select v.Trip_ID, c.LICENSE_NUMBER
from customers c
inner join vehicle v
on c.USER_ID=v.USER_ID
inner join TRIP_DETAILS t
on v.Trip_ID=t.Trip_ID
) as inserted
where TRIP_DETAILS.Trip_ID=inserted.Trip_ID
END;

```

Before trigger:

| | TRIP_ID | Car_Pickup_Point | Drop_Off_Point | Start_Date | Number_Of_Travellers | LICENSE_NUMBER |
|---|---------|--------------------|----------------|------------|----------------------|----------------|
| 1 | 22220 | atlanta | syracuse | 2017-05-05 | 4 | YUN HUANG |
| 2 | 22221 | Syracuse | New york city | 2018-01-01 | 5 | MARK12345 |
| 3 | 22222 | New York | Syracuse | 2018-02-02 | 4 | MARK12345 |
| 4 | 22223 | Las vegas | Syracuse | 2018-03-03 | 6 | MONT12345 |
| 5 | 22224 | syracuse | las vegas | 2018-04-04 | 6 | MAGG12345 |
| 6 | 22225 | new jersey | new york city | 2017-01-01 | 6 | RITS12345 |
| 7 | 22226 | jersey | las vegas | 2017-10-10 | 4 | SOR12345 |
| 8 | 22227 | las vegas | jersey | 2017-11-11 | 4 | GUR123 |
| 9 | 22228 | world trade centre | syracuse | 2017-09-08 | 4 | SAN12345 |

SQL: `insert into customers values(98768, 'SAURABH12345', 234789232, 'SATISFIED')`

After trigger:

| Results Messages | | | | | | |
|------------------|---------|--------------------|----------------|------------|----------------------|----------------|
| | TRIP_ID | Car_Pickup_Point | Drop_Off_Point | Start_Date | Number_Of_Travellers | LICENSE_NUMBER |
| 1 | 22220 | atlanta | syracuse | 2017-05-05 | 4 | YUN HUANG |
| 2 | 22221 | Syracuse | New york city | 2018-01-01 | 5 | MARK12345 |
| 3 | 22222 | New York | Syracuse | 2018-02-02 | 4 | MARK12345 |
| 4 | 22223 | Las vegas | Syracuse | 2018-03-03 | 6 | MONT12345 |
| 5 | 22224 | syracuse | las vegas | 2018-04-04 | 6 | MAGG12345 |
| 6 | 22225 | new jersey | new york city | 2017-01-01 | 6 | RITS12345 |
| 7 | 22226 | jersey | las vegas | 2017-10-10 | 4 | SOR12345 |
| 8 | 22227 | las vegas | jersey | 2017-11-11 | 4 | GUR123 |
| 9 | 22228 | world trade centre | syracuse | 2017-09-08 | 4 | SAN12345 |
| 10 | 22229 | syracuse | atlanta | 2017-09-07 | 4 | SAURABH12345 |

The Trigger also makes sure that if a new trip is created, it generates license number accordingly in the TRIP_DETAILS table. Hence, if we need to look up for the person's license number associated with that trip, we can always view that directly in the TRIP_DETAILS table