

CAR FINDER DATABASE SYSTEM

"Your dream car at the click of a button!"



IST 659 PROJECT IMPLEMENTATION REPORT
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Project Summary:

The mission of this proposed project is to be the ultimate online solution for buying new, certified cars in India. The project can become a leading car search venture that helps users buy cars that are offered by various car-manufacturing companies. Some shoppers become so obsessed with buzzword 'best deal'. They are willing to spend weeks for car shopping. Once they get satisfied with the price, they go on to look for extra features and comforts. This again adds up to the cost of the car and they repeat the same cycle. This process can cost them their valuable time and money, as the deals are very confusing. This cycle makes it harder for the customers as they need to make note of different prices and features of every car manufacturing company. Especially during sale season, there are different discounts offered by the car manufacturing companies which makes life difficult for an individual to decide and conclude on a deal.

This proposed database helps users to make accurate judgements based on the specifications and features of a car. The system will be an online portal carrying rich automotive content including expert reviews, dealer information, detailed specifications, prices and various features associated with it. The database developed for this project is loaded with many functionalities that can help millions of users who are aspiring to buy a car with the click of a button.

The proposed project includes several aspects of a car such as engine type, drive type, transmission, door type that helps the users to gauge their needs. This database will include customer's ratings, review of different cars and also its history which makes the users informed before taking a decision. The vision is to construct a complete ecosystem for consumers, car manufacturers, dealers and related businesses such that consumers have easy and complete access to various models and specification, giving them a complete ownership experience of buying their dream car. This system will maintain up-to-date information of each car, which allows for better interaction between dealers and users.

This report comprises of the following:

- 1) The system design for the proposed system and stating their functions, dependencies and relationships between the various entities and attributes. The analysis of the project is shown in this report. The business rules of this database management system are also stated. The report will show a fully attributed entity relationship diagram (ERD) addressing the major issues in the management system.
- 2) The report also addresses the major data questions and information that may be required by various users of this system.
- 3) The proposed system will maintain all of the data in an Access database. It would be an online portal that would allow different users to help choose the car of their dreams.

Entity and Attribute table:

- 1) Dealer – This entity captures information about dealers serving the customers with different models of cars.

ENTITY NAME: Dealer_Contact	ATTRIBUTE NAME	FIELD TYPE	NULL/ NOT NULL	EXPLANATION
PRIMARY KEY	dealerID	VARCHAR(20)	NOT NULL	Unique Identifier for dealer
OTHER ATTRIBUTES	dealerFname	VARCHAR(20)	NOT NULL	First Name of the dealer
	dealerLname	VARCHAR(20)	NOT NULL	Last Name of the dealer
	dealerContact	VARCHAR(20)	NOT NULL	Contact Number of the dealer
	dealerEmail	VARCHAR(30)	NOT NULL	Email of the dealer

- 2) Location – This entity captures information on the location of the dealers.

ENTITY NAME: Dealer_Location	ATTRIBUTE NAME	FIELD TYPE	NULL/ NOT NULL	EXPLANATION
PRIMARY KEY	locationID	VARCHAR(20)	NOT NULL	Unique Identifier for dealer location
OTHER ATTRIBUTES	dealerState	VARCHAR(20)	NOT NULL	State of the dealer
	dealerCity	VARCHAR(20)	NOT NULL	City of the dealer
	dealerZipcode	VARCHAR(7)	NOT NULL	Zipcode of the dealer

- 3) Model - This entity captures information on the different models available across different brands of car.

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ENTITY NAME: Car_Model	ATTRIBUTE NAME	FIELD TYPE	NULL/ NOT NULL	EXPLANATION
PRIMARY KEY	modelID	VARCHAR(20)	NOT NULL	Primary Key for every model
FOREIGN KEY	vehicleID	VARCHAR(20)	NOT NULL	Foreign key identifying vehicle type
FOREIGN KEY	brandID	VARCHAR(20)	NOT NULL	Foreign key identifying brand name
FOREIGN KEY	engineID	VARCHAR(20)	NOT NULL	Foreign key identifying the type of engine
OTHER ATTRIBUTES	startingPrice	DECIMAL(10,2)		Base Price for a model

4) Dealer_Contact_Location_Details:

ENTITY NAME: Dealer_Contact_Location_Details	ATTRIBUTE NAME	FIELD TYPE	NULL/ NOT NULL	EXPLANATION
PRIMARY KEY, FOREIGN KEY	dealerID	VARCHAR(20)	NOT NULL	primary key of dealer
PRIMARY KEY, FOREIGN KEY	locationID	VARCHAR(20)	NOT NULL	primary key of location

5) Extra Features - This entity captures information on the different extra features associated with a car model.

ENTITY NAME: Extra_Features	ATTRIBUTE NAME	FIELD TYPE	NULL/ NOT NULL	EXPLANATION
PRIMARY KEY	featureID	VARCHAR(20)	NOT NULL	primary key for each extra feature
OTHER ATTRIBUTES	featureName	VARCHAR(30)	NOT NULL	Name of the extra feature

6) Reviews - This entity captures information on the reviews, pros and cons of a model associated with a particular brand of car.

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ENTITY NAME: Reviews	ATTRIBUTE NAME	FIELD TYPE	NULL/ NOT NULL	EXPLANATION
PRIMARY KEY	reviewID	VARCHAR(20)	NOT NULL	Primary Key for every review of a model
FOREIGN KEY	modelID	VARCHAR(20)	NOT NULL	Foreign key identifying the car model
OTHER ATTRIBUTES	ratingStars	INTEGER	NOT NULL	Rating of the car model
	reviewDescription	VARCHAR(80)	NOT NULL	Description of the car model
	pros	VARCHAR(50)	NOT NULL	Advantages of the car model
	cons	VARCHAR(50)	NOT NULL	Disadvantages of the car model

- 7) Vehicle - This entity captures information on the different segments of a vehicle across brands.

ENTITY NAME: Vehicle	ATTRIBUTE NAME	FIELD TYPE	NULL/ NOT NULL	EXPLANATION
PRIMARY KEY	vehicleID	VARCHAR(20)	NOT NULL	primary key for each vehicle type
OTHER ATTRIBUTES	vehicleType	VARCHAR(30)	NOT NULL	Name of the vehicle type

- 8) Tax – This entity captures information on the tax for each and every car based on the vehicle segment across brands.

ENTITY NAME: Reviews	ATTRIBUTE NAME	FIELD TYPE	NULL/ NOT NULL	EXPLANATION
PRIMARY KEY	taxID	VARCHAR(20)	NOT NULL	Primary Key for tax listed against a car
FOREIGN KEY	vehicleID	VARCHAR(20)	NOT NULL	Foreign key identifying unique vehicle type
OTHER ATTRIBUTES	taxCess	INTEGER	NOT NULL	Compensation Tax

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	taxGst	INTEGER	NOT NULL	Goods and Service Tax
	totaltaxPercent	INTEGER	NOT NULL	Total Tax

9) Color - This entity captures information on the Interior and Exterior color required for a car.

ENTITY NAME: Car_Color	ATTRIBUTE NAME	FIELD TYPE	NULL/ NOT NULL	EXPLANATION
PRIMARY KEY	colorID	VARCHAR(20)	NOT NULL	primary key for car color
OTHER ATTRIBUTES	interiorColor	VARCHAR(20)	NOT NULL	Interior color for a car
	exteriorColor	VARCHAR(20)	NOT NULL	Exterior color for a car

10) Brand - This entity captures information on the different brands available for each car.

ENTITY NAME: Brand	ATTRIBUTE NAME	FIELD TYPE	NULL/ NOT NULL	EXPLANATION
PRIMARY KEY	brandID	VARCHAR(20)	NOT NULL	primary key for brand
OTHER ATTRIBUTES	brandName	VARCHAR(20)	NOT NULL	Name of the brand

11) Fuel - This entity captures information on different fuel types for cars.

ENTITY NAME: Fuel	ATTRIBUTE NAME	FIELD TYPE	NULL/ NOT NULL	EXPLANATION
PRIMARY KEY	fuelID	VARCHAR(20)	NOT NULL	Primary key for fuel type
OTHER ATTRIBUTES	fuelType	VARCHAR(20)	NOT NULL	name of the fuel

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	fuelCapacity	DECIMAL(3,1)	NOT NULL	Capacity of the fuel
	mileageCity	DECIMAL(3,1)	NOT NULL	Mileage given through the type of fuel

12) Engine - This entity captures information on type of engine used in cars across various models.

ENTITY NAME: Engine	ATTRIBUTE NAME	FIELD TYPE	NULL/ NOT NULL	EXPLANATION
PRIMARY KEY	engineID	VARCHAR(20)	NOT NULL	Primary key for engine type
OTHER ATTRIBUTES	engineType	VARCHAR(20)	NOT NULL	Name of the engine
	turboCharger	VARCHAR(5)	NOT NULL	If the Engine has turboCharger or Not

13) Car_Fuel_Model_Deatils:

ENTITY NAME: Car_Fuel_Model_Details	ATTRIBUTE NAME	FIELD TYPE	NULL/ NOT NULL	EXPLANATION
PRIMARY KEY, FOREIGN KEY	fuelID	VARCHAR(20)	NOT NULL	primary key of fuel
PRIMARY KEY, FOREIGN KEY	modelID	VARCHAR(20)	NOT NULL	primary key of car model

14) Car_Feature_Model_Deatils:

ENTITY NAME: Car_Feature_Model_Details	ATTRIBUTE NAME	FIELD TYPE	NULL/ NOT NULL	EXPLANATION
PRIMARY KEY, FOREIGN KEY	featureID	VARCHAR(20)	NOT NULL	primary key of extra features
PRIMARY KEY, FOREIGN KEY	modelID	VARCHAR(20)	NOT NULL	primary key of car model

15) Car_Dealer_Model_Deatils:

ENTITY NAME: Car_Dealer_Model I_Details	ATTRIBUTE NAME	FIELD TYPE	NULL/ NOT NULL	EXPLANATION
PRIMARY KEY,FOREIGN KEY	dealerID	VARCHAR(20)	NOT NULL	primary key of dealer
PRIMARY KEY,FOREIGN KEY	modelID	VARCHAR(20)	NOT NULL	primary key of car model

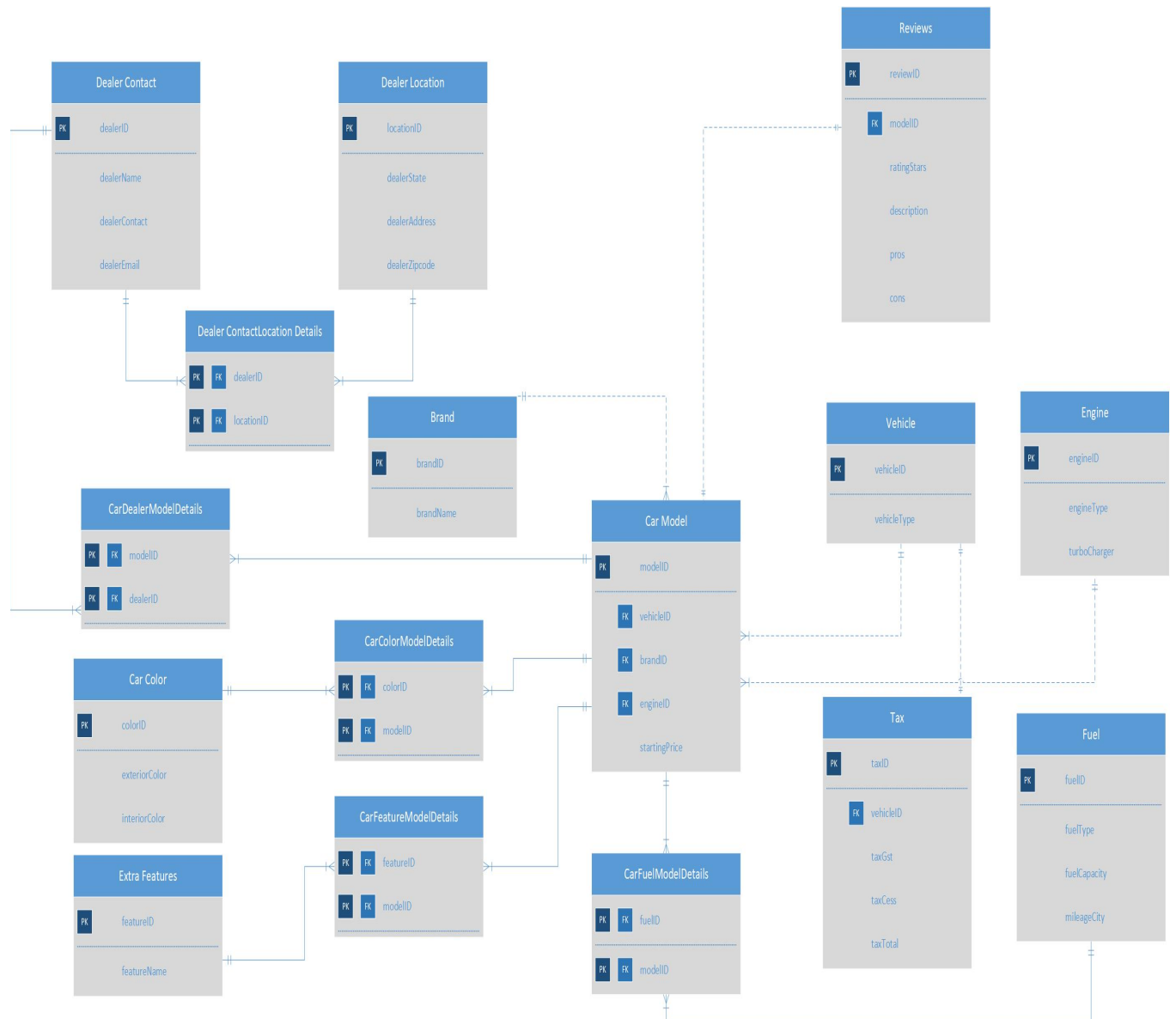
16) Car_Color_Model_Deatils:

ENTITY NAME: Car_Color_Model _Details	ATTRIBUTE NAME	FIELD TYPE	NULL/ NOT NULL	EXPLANATION
PRIMARY KEY,FOREIGN KEY	colorID	VARCHAR(20)	NOT NULL	primary key of car color
PRIMARY KEY,FOREIGN KEY	modelID	VARCHAR(20)	NOT NULL	primary key of car model

Database Infrastructure:

The database system infrastructure used is based on a client-server model. SQL Server is used as the database engine and Access is used as the interface design tool. Data is inserted, deleted, updated, and queried from the SQL Server database with the help of forms on Access. Useful data stored on the SQL Server database can also be viewed with the help of reports generated through Access.

ERD Diagram:



Creation of Tables:

Dealer Contact:

```
create table Dealer_Contact (  
dealerID VARCHAR(20) NOT NULL PRIMARY KEY,  
dealerFname VARCHAR(20) NOT NULL,  
dealerLname VARCHAR(20) NOT NULL,  
dealerContact VARCHAR(20) NOT NULL,  
dealerEmail VARCHAR(30) NOT NULL  
);
```

Dealer Location:

```
create table Dealer_Location (  
locationID VARCHAR(20) NOT NULL PRIMARY KEY,  
dealerCity VARCHAR(20) NOT NULL,  
dealerState VARCHAR(20) NOT NULL,  
dealerZipcode VARCHAR(7) NOT NULL  
);
```

Car Model:

```
create table Car_Model (  
modelID VARCHAR(20) NOT NULL PRIMARY KEY,  
vehicleID VARCHAR(20) NOT NULL FOREIGN KEY REFERENCES Vehicle(vehicleID),  
brandID VARCHAR(20) NOT NULL FOREIGN KEY REFERENCES Brand(brandID),  
engineID VARCHAR(20) NOT NULL FOREIGN KEY REFERENCES Engine(engineID),  
startingPrice DECIMAL(10,2) NOT NULL  
);
```

Dealer Contact Location Details:

```
Create table Dealer_Contact_Location_Details (  
dealerID VARCHAR(20) NOT NULL,  
locationID VARCHAR(20) NOT NULL,  
PRIMARY KEY(dealerID,locationID)  
);
```

Extra Features:

```
create table Extra_Features (  
featureID VARCHAR(20) NOT NULL PRIMARY KEY,  
featureName VARCHAR(30) NOT NULL  
);
```

Reviews:

```
create table Reviews (  

```

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```
reviewID VARCHAR(20) NOT NULL PRIMARY KEY,  
modelID VARCHAR(20) NOT NULL FOREIGN KEY REFERENCES Car_Model(modelID),  
ratingStars INTEGER NOT NULL,  
reviewDescription VARCHAR(80) NOT NULL,  
pros VARCHAR(50) NOT NULL,  
cons VARCHAR(50) NOT NULL  
);
```

Vehicle:

```
create table Vehicle (  
vehicleID VARCHAR(20) NOT NULL PRIMARY KEY,  
vehicleType VARCHAR(30) NOT NULL  
);
```

Tax:

```
create table Tax (  
taxID VARCHAR(20) NOT NULL PRIMARY KEY,  
vehicleID VARCHAR(20) NOT NULL FOREIGN KEY REFERENCES Vehicle(vehicleID),  
taxCess INTEGER NOT NULL,  
taxGst INTEGER NOT NULL,  
totaltaxPercent INTEGER NOT NULL  
);
```

Car Color:

```
create table Car_Color (  
colorID VARCHAR(20) NOT NULL PRIMARY KEY,  
exteriorColor VARCHAR(20) NOT NULL,  
interiorColor VARCHAR(20) NOT NULL  
);
```

Brand:

```
create table Brand (  
brandID VARCHAR(20) NOT NULL PRIMARY KEY,  
brandName VARCHAR(20) NOT NULL  
);
```

Fuel:

```
create table Fuel (  
fuelID VARCHAR(20) NOT NULL PRIMARY KEY,  
fuelType VARCHAR(20) NOT NULL,  
fuelCapacity DECIMAL(3,1) NOT NULL,  
mileageCity DECIMAL(3,1) NOT NULL  
);
```

Engine:

```
create table Engine (  
engineID VARCHAR(20) NOT NULL PRIMARY KEY,  
engineType VARCHAR(20) NOT NULL,  
turboCharger VARCHAR(5) NOT NULL CHECK(turboCharger IN('Yes','No'))  
);
```

Car Fuel Model Details:

```
create table Car_Fuel_Model_Details (  
fuelID VARCHAR(20) NOT NULL,  
modelID VARCHAR(20) NOT NULL,  
PRIMARY KEY(fuelID,modelID)  
);
```

Car Feature Model Details:

```
create table Car_Feature_Model_Details (  
featureID VARCHAR(20) NOT NULL,  
modelID VARCHAR(20) NOT NULL,  
PRIMARY KEY(featureID,modelID)  
);
```

Car Dealer Model Details:

```
create table Car_Dealer_Model_Details (  
DealerID VARCHAR(20) NOT NULL,  
modelID VARCHAR(20) NOT NULL,  
PRIMARY KEY(DealerID,modelID)  
);
```

Car Color Model Details:

```
create table Car_Color_Model_Details (  
colorID VARCHAR(20) NOT NULL,  
modelID VARCHAR(20) NOT NULL,  
PRIMARY KEY(colorID,modelID)  
);
```

Population of Tables:

Dealer Contact:

Insert into

```
Dealer_Contact(dealerID,dealerFname,dealerLname,dealerContact,dealerEmail)values(100,'Adi  
tya','Ganesh','315-289-0422','adgan@gmail.com');
```

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Insert into

```
Dealer_Contact(dealerID,dealerFname,dealerLname,dealerContact,dealerEmail)values(101,'Abirami','Vivek','315-289-0432','abviv@gmail.com');
```

Insert into

```
Dealer_Contact(dealerID,dealerFname,dealerLname,dealerContact,dealerEmail)values(102,'Premama','Mani','315-289-0442','prman@gmail.com');
```

Insert into

```
Dealer_Contact(dealerID,dealerFname,dealerLname,dealerContact,dealerEmail)values(103,'Ramm','Hari','315-289-0423','rahar@gmail.com');
```

Insert into

```
Dealer_Contact(dealerID,dealerFname,dealerLname,dealerContact,dealerEmail)values(104,'Faru','Syed','315-289-0426','fasyed@gmail.com');
```

Insert into

```
Dealer_Contact(dealerID,dealerFname,dealerLname,dealerContact,dealerEmail)values(105,'Aishh','Rajan','315-289-0492','airaj@gmail.com');
```

Select * from Dealer_Contact;

	dealerID	dealerFname	dealerLname	dealerContact	dealerEmail
1	100	Aditya	Ganesh	315-289-0422	adgan@gmail.com
2	101	Abirami	Vivek	315-289-0432	abviv@gmail.com
3	102	Prema	Mani	315-289-0442	prman@gmail.com
4	103	Ram	Hari	315-289-0423	rahar@gmail.com
5	104	Faru	Syed	315-289-0426	fasyed@gmail.com
6	105	Aish	Rajan	315-289-0492	airaj@gmail.com

Query executed successfully. | ist-s-students.syr.edu (12... | AD\adganesh (87) | IST659_M003_adganesh | 00:00:00 | 6 rows

Dealer Location:

Insert into

```
Dealer_Location(locationID,dealerCity,dealerState,dealerZipcode)values('CH100','Chennai','Tamilnadu','600101');
```

Insert into

```
Dealer_Location(locationID,dealerCity,dealerState,dealerZipcode)values('CH101','Chennai','Tamilnadu','600102');
```

Insert into

```
Dealer_Location(locationID,dealerCity,dealerState,dealerZipcode)values('CH102','Chennai','Tamilnadu','600103');
```

Insert into

```
Dealer_Location(locationID,dealerCity,dealerState,dealerZipcode)values('MU100','Mumbai','Maharashtra','400002');
```

Insert into

```
Dealer_Location(locationID,dealerCity,dealerState,dealerZipcode)values('MU101','Mumbai','Maharashtra','400008');
```

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Insert into

```
Dealer_Location(locationID,dealerCity,dealerState,dealerZipcode)values('TI100','Tirupathi','Andhra Pradesh','517101');
```

Select * from Dealer_Location;

	locationID	dealerCity	dealerState	dealerZipcode
1	CH100	Chennai	Tamilnadu	600101
2	CH101	Chennai	Tamilnadu	600102
3	CH102	Chennai	Tamilnadu	600103
4	MU100	Mumbai	Maharastra	400002
5	MU101	Mumbai	Maharastra	400008
6	TI100	Tirupathi	Andhra Pradesh	517101

Query executed successfully. ist-s-students.syr.edu (12... AD\adganesh (87) IST659_M003_adganesh 00:00:00 6 rows

Dealer Contact Location Details:

```
Insert into Dealer_Contact_Location_Details(dealerID,locationID)values(100,'CH100');
Insert into Dealer_Contact_Location_Details(dealerID,locationID)values(101,'CH101');
Insert into Dealer_Contact_Location_Details(dealerID,locationID)values(102,'CH102');
Insert into Dealer_Contact_Location_Details(dealerID,locationID)values(103,'MU100');
Insert into Dealer_Contact_Location_Details(dealerID,locationID)values(104,'MU101');
Insert into Dealer_Contact_Location_Details(dealerID,locationID)values(105,'TI100');
```

Select * from Dealer_Contact_Location_Details;

	dealerID	locationID
1	100	CH100
2	101	CH101
3	102	CH102
4	103	MU100
5	104	MU101
6	105	TI100

Query executed successfully. ist-s-students.syr.edu (12... AD\adganesh (87) IST659_M003_adganesh 00:00:00 6 rows

Extra_Features:

```
Insert into Extra_Features(featureID,featureName)values('EF100','Keyless Entry');
Insert into Extra_Features(featureID,featureName)values('EF101','Air Bags');
Insert into Extra_Features(featureID,featureName)values('EF102','Sun Roof');
Insert into Extra_Features(featureID,featureName)values('EF103','Alloy Wheels');
Insert into Extra_Features(featureID,featureName)values('EF104','Antilock Braking System');
Insert into Extra_Features(featureID,featureName)values('EF105','Automatic Climate Control');
```

Select * from Extra_Features;

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Results		Messages
featureID	featureName	
1 EF100	Keyless Entry	
2 EF101	Air Bags	
3 EF102	Sun Roof	
4 EF103	Alloy Wheels	
5 EF104	Antilock Braking System	
6 EF105	Automatic Climate Control	

Query executed successfully. ist-s-students.syr.edu (12.... AD\adganesh (87) IST659_M003_adganesh 00:00:00 6 rows

Vehicle:

Insert into Vehicle(vehicleID,vehicleType)values('V100','Hatchback');

Insert into Vehicle(vehicleID,vehicleType)values('V101','Sedan');

Insert into Vehicle(vehicleID,vehicleType)values('V102','SUV');

Insert into Vehicle(vehicleID,vehicleType)values('V103','MUV');

Insert into Vehicle(vehicleID,vehicleType)values('V104','Luxury');

Insert into Vehicle(vehicleID,vehicleType)values('V105','CUV');

Select * from Vehicle;

Results		Messages
vehicleID	vehicleType	
1 V100	Hatchback	
2 V101	Sedan	
3 V102	SUV	
4 V103	MUV	
5 V104	Luxury	
6 V105	CUV	

Query executed successfully. ist-s-students.syr.edu (12.... AD\adganesh (87) IST659_M003_adganesh 00:00:00 6 rows

Tax:

Insert into Tax(taxID,vehicleID,taxCess,taxGst,totaltaxPercent)values('TX100','V100',1,28,29);

Insert into Tax(taxID,vehicleID,taxCess,taxGst,totaltaxPercent)values('TX101','V101',3,28,31);

Insert into Tax(taxID,vehicleID,taxCess,taxGst,totaltaxPercent)values('TX102','V102',2,28,30);

Insert into Tax(taxID,vehicleID,taxCess,taxGst,totaltaxPercent)values('TX103','V103',2,28,30);

Insert into Tax(taxID,vehicleID,taxCess,taxGst,totaltaxPercent)values('TX104','V104',5,28,33);

Insert into Tax(taxID,vehicleID,taxCess,taxGst,totaltaxPercent)values('TX105','V105',3,28,31);

Select * from Tax;

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Results		Messages			
	taxiID	vehicleID	taxCess	taxGst	totaltaxPercent
1	TX100	V100	1	28	29
2	TX101	V101	3	28	31
3	TX102	V102	2	28	30
4	TX103	V103	2	28	30
5	TX104	V104	5	28	33
6	TX105	V105	3	28	31

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\adganesh (87) | IST659_M003_adganesh | 00:00:00 | 6 rows

Car Color:

```
Insert into Car_Color(colorID,exteriorColor,interiorColor)values('CO100','Black','Grey');
Insert into Car_Color(colorID,exteriorColor,interiorColor)values('CO101','Black','White');
Insert into Car_Color(colorID,exteriorColor,interiorColor)values('CO102','Silver','Beige');
Insert into Car_Color(colorID,exteriorColor,interiorColor)values('CO103','White','Grey');
Insert into Car_Color(colorID,exteriorColor,interiorColor)values('CO104','Red','Black');
Insert into Car_Color(colorID,exteriorColor,interiorColor)values('CO105','Blue','Black');
```

Select * from Car_Color;

Results		Messages	
	colorID	exteriorColor	interiorColor
1	CO100	Black	Grey
2	CO101	Black	White
3	CO102	Silver	Beige
4	CO103	White	Grey
5	CO104	Red	Black
6	CO105	Blue	Black

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\adganesh (87) | IST659_M003_adganesh | 00:00:00 | 6 rows

Brand:

```
Insert into Brand(brandID,brandName)values('BR100','Hyundai');
Insert into Brand(brandID,brandName)values('BR101','Audi');
Insert into Brand(brandID,brandName)values('BR102','Mercedes Benz');
Insert into Brand(brandID,brandName)values('BR103','Toyota');
Insert into Brand(brandID,brandName)values('BR104','Renault');
Insert into Brand(brandID,brandName)values('BR105','Ford');
```

Select * from Brand;

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Results		Messages	
	brandID	brandName	
1	BR100	Hyundai	
2	BR101	Audi	
3	BR102	Mercedes Benz	
4	BR103	Toyota	
5	BR104	Renault	
6	BR105	Ford	

Query executed successfully. ist-s-students.syr.edu (12.... AD\adganesh (87) IST659_M003_adganesh 00:00:00 6 rows

Fuel:

```
Insert into Fuel(fuelID,fuelType,fuelCapacity,mileageCity)values('FU100','Petrol','40.0','20.2');
Insert into Fuel(fuelID,fuelType,fuelCapacity,mileageCity)values('FU101','Diesel','45.0','22.4');
Insert into Fuel(fuelID,fuelType,fuelCapacity,mileageCity)values('FU102','Diesel','42.0','15.6');
Insert into Fuel(fuelID,fuelType,fuelCapacity,mileageCity)values('FU103','Diesel','45.0','17.8');
Insert into Fuel(fuelID,fuelType,fuelCapacity,mileageCity)values('FU104','Petrol','35.5','18.0');
Insert into Fuel(fuelID,fuelType,fuelCapacity,mileageCity)values('FU105','Petrol','44.0','20.4');
Insert into Fuel(fuelID,fuelType,fuelCapacity,mileageCity)values('FU106','Petrol','42.5','16.6');
Insert into Fuel(fuelID,fuelType,fuelCapacity,mileageCity)values('FU107','Diesel','40.5','25.3');
```

Select * from fuel;

Results Messages

	fuelID	fuelType	fuelCapacity	mileageCity
1	FU100	Petrol	40.0	20.2
2	FU101	Diesel	45.0	22.4
3	FU102	Diesel	42.0	15.6
4	FU103	Diesel	45.0	17.8
5	FU104	Petrol	35.5	18.0
6	FU105	Petrol	44.0	20.4
7	FU106	Petrol	42.5	16.6
8	FU107	Diesel	40.5	25.3

Query executed successfully.ist-s-students.syr.edu (12....AD\adqanesh (87)IST659 M003 adqanesh00:00:008 rows

Engine:

```
Insert into Engine(engineID,engineType,turboCharger)values('EN100','In-line','No');
Insert into Engine(engineID,engineType,turboCharger)values('EN101','W-Type','Yes');
Insert into Engine(engineID,engineType,turboCharger)values('EN102','V-Type','Yes');
Insert into Engine(engineID,engineType,turboCharger)values('EN103','Radial','No');
Insert into Engine(engineID,engineType,turboCharger)values('EN104','OppositePiston','No');
Insert into Engine(engineID,engineType,turboCharger)values('EN105','Opposed Cylinder','No');
Insert into Engine(engineID,engineType,turboCharger)values('EN106','In-line','Yes');
```

Select * from Engine;

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Results		Messages	
	engineID	engineType	turboCharger
1	EN100	In-line	No
2	EN101	W-Type	Yes
3	EN102	V-Type	Yes
4	EN103	Radial	No
5	EN104	Opposite Piston	No
6	EN105	Opposed Cylinder	No
7	EN106	In-line	Yes

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\adganesh (87) | IST659_M003_adganesh | 00:00:00 | 7 rows

Car_Model:

Insert into

```
Car_Model(modelID,vehicleID,brandID,engineID,startingPrice)values('MO100','V100','BR100','EN100',5000000);
```

Insert into

```
Car_Model(modelID,vehicleID,brandID,engineID,startingPrice)values('MO101','V101','BR101','EN101',2500000);
```

Insert into

```
Car_Model(modelID,vehicleID,brandID,engineID,startingPrice)values('MO102','V102','BR102','EN102',5000000);
```

Insert into

```
Car_Model(modelID,vehicleID,brandID,engineID,startingPrice)values('MO103','V103','BR103','EN103',7000000);
```

Insert into

```
Car_Model(modelID,vehicleID,brandID,engineID,startingPrice)values('MO104','V104','BR104','EN104',1000000);
```

Insert into

```
Car_Model(modelID,vehicleID,brandID,engineID,startingPrice)values('MO105','V100','BR103','EN105',1200000);
```

Insert into

```
Car_Model(modelID,vehicleID,brandID,engineID,startingPrice)values('MO106','V101','BR100','EN106',1500000);
```

Insert into

```
Car_Model(modelID,vehicleID,brandID,engineID,startingPrice)values('MO107','V102','BR101','EN102',2200000);
```

Insert into

```
Car_Model(modelID,vehicleID,brandID,engineID,startingPrice)values('MO108','V103','BR105','EN104',1300000);
```

Insert into

```
Car_Model(modelID,vehicleID,brandID,engineID,startingPrice)values('MO109','V104','BR102','EN105',5200000);
```

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Insert into

```
Car_Model(modelID,vehicleID,brandID,engineID,startingPrice)values('MO110','V105','BR104','EN101',900000);
```

Insert into

```
Car_Model(modelID,vehicleID,brandID,engineID,startingPrice)values('MO111','V100','BR103','EN102',600000);
```

```
select * from Car_Model;
```

	modelID	vehicleID	brandID	engineID	startingPrice
1	MO100	V100	BR100	EN100	500000.00
2	MO101	V101	BR101	EN100	2500000.00
3	MO102	V102	BR102	EN102	5000000.00
4	MO103	V103	BR103	EN103	700000.00
5	MO104	V104	BR104	EN104	1000000.00
6	MO105	V105	BR105	EN105	1200000.00
7	MO106	V101	BR100	EN106	1500000.00
8	MO107	V102	BR101	EN102	2200000.00
9	MO108	V103	BR105	EN104	1300000.00
10	MO109	V104	BR102	EN105	5200000.00
11	MO110	V105	BR104	EN101	900000.00
12	MO111	V100	BR103	EN102	600000.00

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\adganesh (87) | IST659_M003_adganesh | 00:00:00 | 12 rows

Reviews:

Insert into

```
Reviews(reviewID,modelID,ratingStars,reviewDescription,pros,cons)values('RE100','MO100',8,'Good Budget car for a family of four','Generous cargo space at the back','Acceleration lacks punch');
```

Insert into

```
Reviews(reviewID,modelID,ratingStars,reviewDescription,pros,cons)values('RE101','MO101',9,'World Class Design with limited features','Strong acceleration from the turbocharged engine','Limited backseat space');
```

Insert into

```
Reviews(reviewID,modelID,ratingStars,reviewDescription,pros,cons)values('RE102','MO102',10,'Sporty and Stylish','Available third row of seats','Options quickly drive the price up');
```

Insert into

```
Reviews(reviewID,modelID,ratingStars,reviewDescription,pros,cons)values('RE103','MO103',7,'A beast at affordable prices','Engines are the best','Not an ideal car for daily commute');
```

Insert into

```
Reviews(reviewID,modelID,ratingStars,reviewDescription,pros,cons)values('RE104','MO104',6,'Luxury awaits you!','Powerful features with turbocharged engine','Pricey!');
```

Insert into

```
Reviews(reviewID,modelID,ratingStars,reviewDescription,pros,cons)values('RE105','MO105',8,'Designed to get you anywhere and make the most of your city life','20 plus storage compartments','Absence of reclining back seats');
```

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Select * from Reviews;

Results

Messages

	reviewID	modelID	ratingStars	reviewDescription	pros	cons
1	RE100	MO100	8	Good Budget car for a family of four	Generous cargo space at the back	Acceleration lacks punch
2	RE101	MO101	9	World Class Design with limited features	Strong acceleration from the turbocharged engine	Limited backseat space
3	RE102	MO102	10	Sporty and Stylish	Available third row of seats	Options quickly drive the price up
4	RE103	MO103	7	A beast at affordable prices	Engines are the best	Not an ideal car for daily commute
5	RE104	MO104	6	Luxury awaits you!	Powerful features with turbocharged engine	Pricey!
6	RE105	MO105	8	Designed to get you anywhere and make the most ...	20 plus storage compartments	Absence of reclining back seats

Query executed successfully.

ist-s-students.syr.edu (12.... AD\adganesh (87) IST659_M003_adganesh 00:00:00 6 rows

Car Feature Model Details:

```
Insert into Car_Feature_Model_Details(featureID,modelID)values('EF100','MO100');
Insert into Car_Feature_Model_Details(featureID,modelID)values('EF101','MO101');
Insert into Car_Feature_Model_Details(featureID,modelID)values('EF102','MO102');
Insert into Car_Feature_Model_Details(featureID,modelID)values('EF103','MO103');
Insert into Car_Feature_Model_Details(featureID,modelID)values('EF104','MO104');
Insert into Car_Feature_Model_Details(featureID,modelID)values('EF105','MO105');
```

Select * from Car_Feature_Model_Details;

Results		Messages	
featureID	modelID		
1	EF100	MO100	
2	EF101	MO101	
3	EF102	MO102	
4	EF103	MO103	
5	EF104	MO104	
6	EF105	MO105	

Query executed successfully. ist-s-students.syr.edu (12... AD\adganesh (87) IST659_M003_adganesh 00:00:00 6 rows

Car dealer Model Details:

```
Insert into Car_dealer_Model_Details(dealerID,modelID)values('100','MO100');
Insert into Car_dealer_Model_Details(dealerID,modelID)values('101','MO101');
Insert into Car_dealer_Model_Details(dealerID,modelID)values('102','MO102');
Insert into Car_dealer_Model_Details(dealerID,modelID)values('103','MO103');
Insert into Car_dealer_Model_Details(dealerID,modelID)values('104','MO104');
Insert into Car_dealer_Model_Details(dealerID,modelID)values('105','MO105');
Insert into Car_dealer_Model_Details(dealerID,modelID)values('100','MO106');
Insert into Car_dealer_Model_Details(dealerID,modelID)values('100','MO107');
Insert into Car_dealer_Model_Details(dealerID,modelID)values('101','MO108');
Insert into Car_dealer_Model_Details(dealerID,modelID)values('101','MO109');
Insert into Car_dealer_Model_Details(dealerID,modelID)values('101','MO110');
```

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```
Insert into Car_dealer_Model_Details(dealerID,modelID)values('104','MO107');
Insert into Car_dealer_Model_Details(dealerID,modelID)values('104','MO108');
Insert into Car_dealer_Model_Details(dealerID,modelID)values('105','MO100');
```

```
select * from Car_dealer_Model_Details;
```

	DealerID	modelID
1	100	MO100
2	100	MO106
3	100	MO107
4	101	MO101
5	101	MO108
6	101	MO109
7	101	MO110
8	102	MO102
9	103	MO103
10	104	MO104
11	104	MO107
12	104	MO108
13	105	MO100
14	105	MO105

Query executed successfully.

ist-s-students.syr.edu (12... AD\adganesh (87) IST659_M003_adganesh 00:00:00 14 rows

Car Color Model Details:

```
Insert into Car_color_Model_Details(colorID,modelID)values('CO100','MO100');
Insert into Car_color_Model_Details(colorID,modelID)values('CO101','MO101');
Insert into Car_color_Model_Details(colorID,modelID)values('CO102','MO102');
Insert into Car_color_Model_Details(colorID,modelID)values('CO103','MO103');
Insert into Car_color_Model_Details(colorID,modelID)values('CO104','MO104');
Insert into Car_color_Model_Details(colorID,modelID)values('CO105','MO105');
```

```
select * from Car_color_Model_Details;
```

	colorID	modelID
1	CO100	MO100
2	CO101	MO101
3	CO102	MO102
4	CO103	MO103
5	CO104	MO104
6	CO105	MO105

Query executed successfully.

ist-s-students.syr.edu (12... AD\adganesh (87) IST659_M003_adganesh 00:00:00 6 rows

Car fuel Model Details:

```
Insert into Car_fuel_Model_Details(fuelID,modelID)values('FU100','MO100');
Insert into Car_fuel_Model_Details(fuelID,modelID)values('FU101','MO101');
Insert into Car_fuel_Model_Details(fuelID,modelID)values('FU102','MO102');
Insert into Car_fuel_Model_Details(fuelID,modelID)values('FU103','MO103');
Insert into Car_fuel_Model_Details(fuelID,modelID)values('FU104','MO104');
Insert into Car_fuel_Model_Details(fuelID,modelID)values('FU105','MO105');
```

```
select * from Car_fuel_Model_Details;
```

Results		Messages	
	fuelID	modelID	
1	FU100	MO100	
2	FU101	MO101	
3	FU102	MO102	
4	FU103	MO103	
5	FU104	MO104	
6	FU105	MO105	

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\adganesh (87) | IST659_M003_adganesh | 00:00:00 | 6 rows

MAJOR DATA QUESTIONS:

1) What is the extra available feature for each car?

```
select b.brandName,ef.featureName from brand b
inner join Car_Model cm
on b.brandID=cm.brandID
inner join Car_Feature_Model_Details fm
on cm.modelID=fm.modelID
inner join Extra_Features ef
on fm.featureID=ef.featureID;
```

Results		Messages	
	brandName	featureName	
1	Hyundai	Keyless Entry	
2	Audi	Air Bags	
3	Mercedes Benz	Sun Roof	
4	Toyota	Alloy Wheels	
5	Renault	Antilock Braking System	
6	Ford	Automatic Climate Control	

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\adganesh (77) | IST659_M003_adganesh | 00:00:00 | 6 rows

2) Which car is economical in terms of fuel consumption?

```
select brandName,fuelType,mileageCity from(select
b.brandName,f.fuelType,f.mileageCity,rnk() over(partition by fuelType order by mileageCity
desc)as rnk from brand b
inner join Car_Model cm
on b.brandID=cm.brandID
inner join Car_Fuel_Model_Details fu
on cm.modelID=fu.modelID
```

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```
inner join Fuel f
on fu.fuelID=f.fuelID)rnk
where rnk=1;
```

(OR)

```
select b.brandName,cm.modelID,fi.fuelType,fi.MileageCity from brand b
inner join Car_Model cm
on b.brandID=cm.brandID
inner join Car_Fuel_Model_Details fu
on cm.modelID=fu.modelID
inner join Fuel fi
on fi.fuelID=fu.fuelID
inner join
(select fuelType,max(mileageCity) MileageCity
from Fuel
group by fuelType)f
on f.mileageCity=fi.mileageCity
```

Results

Messages

	brandName	modelID	fuelType	MileageCity
1	Audi	MO101	Diesel	22.4
2	Ford	MO105	Petrol	20.4

Query executed successfully.

ist-s-students.syr.edu (12...

AD\adganesh (135)

IST659_M003_adganesh

00:00:00

2 rows

3) What is the price of car in different car segments for each brand?

Results		Messages	
	brandName	vehicleType	Price
1	Renault	CUV	900000.00
2	Ford	CUV	1200000.00
3	Hyundai	Hatchback	500000.00
4	Toyota	Hatchback	600000.00
5	Renault	Luxury	1000000.00
6	Mercedes...	Luxury	5200000.00
7	Toyota	MUV	700000.00
8	Ford	MUV	1300000.00
9	Hyundai	Sedan	1500000.00
10	Audi	Sedan	2500000.00
11	Audi	SUV	2200000.00
12	Mercedes...	SUV	5000000.00

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\adganesh (77) | IST659_M003_adganesh | 00:00:00 | 12 rows

4) What are the top 5 cars which has the best ratings?

```
Select TOP 5 b.brandName,cm.modelID,r.ratingStars,r.reviewDescription,r.pros,r.cons from
brand b
```


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```
inner join Car_Model cm
on b.brandID=cm.brandID
inner join Reviews r
on cm.modelID=r.modelID
ORDER BY r.ratingStars desc;
```

Results Messages	
	brandName
	modelID
	ratingStars
	reviewDescription
	pros
	cons
1	Mercedes Benz
2	Audi
3	Hyundai
4	Ford
5	Toyota
Query executed successfully.	
ist-s-students.syr.edu (12.... AD\adganesh (77) IST659_M003_adganesh 00:00:00 5 rows	

5) Who are the available dealers for purchasing a specific model (MO100)?

Select

```
dc.dealerID,dc.dealerFname,dc.dealerLname,dc.dealerContact,dc.dealerEmail,dl.dealerCity,dl.d
ealerState,dl.dealerZipcode,dm.modelID from Dealer_Contact dc
inner join Dealer_Contact_Location_Details cl
on dc.dealerID=cl.dealerID
inner join Dealer_Location dl
on cl.locationID=dl.locationID
inner join Car_dealer_Model_Details dm
on dc.dealerID=dm.dealerID
where dm.modelID='MO100';
```

Results Messages	
	dealerID
	dealerFname
	dealerLname
	dealerContact
	dealerEmail
	dealerCity
	dealerState
	dealerZipcode
	modelID
1	100
2	105
Query executed successfully.	
ist-s-students.syr.edu (12.... AD\adganesh (77) IST659_M003_adganesh 00:00:00 2 rows	

Forms:

- Welcome page:

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Welcome to Car-Finder!
Get to know about your dream car at the click of a button!

Car models with Price

Car models with Reviews

Dealer Contact with locations

Car models with Colors

- Car Review Form:

car_review_form

brandName

Reviews

ratingStars	reviewDescription	pros	cons
8	Good Budget car for a family of four	Generous cargo space at the back	Acceleration lacks punch

Record: 1 of 1

No Filter

Search

← Add Record →

Delete Record

Record: 1 of 7

No Filter

Search

- Dealer Contact Location Form:

Dealer_Contact_Location

dealerID

dealerFname

dealerLname

dealerContact

dealerEmail

Dealer_Contact_Location

dealerCity	dealerState	dealerZipcode	locationID
Chennai	Tamilnadu	600101	CH100
*			

Record: 1 of 1

No Filter Search

← Add Record →

Delete Record

Record: 1 of 6

No Filter Search

- Car Color Form:

Car_color_form

brandName

Car_Model

modelID
MO100
MO106
*

Record: 1 of 2

No Filter Search

Car_Color

exteriorColor	interiorColor
Black	Grey

Record: 1 of 1

No Filter Search

← Add Record →

Delete Record

Record: 1 of 7

No Filter Search

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- Car Price Form:

Car_Price_Form

brandName

Hyundai

Car_Model

modelID	vehicleType	startingPrice
MO100	Hatchback	500000
MO106	Sedan	1500000

Record: 1 of 2

No Filter

Search

Add Record

Delete Record


Record: 1 of 7

No Filter

Search

Reports:

Data question 1:

 Q1	Sunday, April 14, 2019 10:33:35 PM														
<table><thead><tr><th>brandName</th><th>featureName</th></tr></thead><tbody><tr><td>Hyundai</td><td>Keyless Entry</td></tr><tr><td>Audi</td><td>Air Bags</td></tr><tr><td>Mercedes Benz</td><td>Sun Roof</td></tr><tr><td>Toyota</td><td>Alloy Wheels</td></tr><tr><td>Renault</td><td>Antilock Braking System</td></tr><tr><td>Ford</td><td>Automatic Climate Control</td></tr></tbody></table>	brandName	featureName	Hyundai	Keyless Entry	Audi	Air Bags	Mercedes Benz	Sun Roof	Toyota	Alloy Wheels	Renault	Antilock Braking System	Ford	Automatic Climate Control	
brandName	featureName														
Hyundai	Keyless Entry														
Audi	Air Bags														
Mercedes Benz	Sun Roof														
Toyota	Alloy Wheels														
Renault	Antilock Braking System														
Ford	Automatic Climate Control														
6															

Page 1 of 1

Data Question 3:

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Q3			Sunday, April 14, 2019 10:58:41 PM
brandName	vehicleType	startingPrice	
Renault	CUV	900000	
Ford	CUV	1200000	
Hyundai	Hatchback	500000	
Toyota	Hatchback	600000	
Renault	Luxury	1000000	
Mercedes Benz	Luxury	5200000	
Toyota	MUV	700000	
Ford	MUV	1300000	
Hyundai	Sedan	1500000	
Audi	Sedan	2500000	
Audi	SUV	2200000	
Mercedes Benz	SUV	5000000	
12			

Page 1 of 1

Data Question 4:

Q4						Sunday, April 14, 2019 11:32:57 PM
brandName	modelID	ratingStars	reviewDescription	pros	cons	
Hyundai	MO100	8	Good Budget car for a family of four	Generous cargo space at the back	Acceleration lacks punch	
Audi	MO101	9	World Class Design with limited features	Strong acceleration from the turbocharged engine	Limited backseat space	
Mercedes Benz	MO102	10	Sporty and Stylish	Available third row of seats	Options quickly drive the price up	
Toyota	MO103	7	A beast at affordable prices	Engines are the best	Not an ideal car for daily commute	
Renault	MO104	6	Luxury awaits you!	Powerful features with turbocharged engine	Pricey!	
5						

Page 1 of 1

Data Question 5:

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Q5				
Sunday, April 14, 2019				
11:37:02 PM				
dealerID	dealerFname	dealerLname	dealerContact	dealerEmail
100	Aditya	Ganesh	315-289-0422	adgan@gmail.com
105	Aish	Rajan	315-289-0492	airaj@gmail.com
2				

Page 1 of 1

dealerEmail	dealerCity	dealerState	dealerZipcode
adgan@gmail.com	Chennai	Tamilnadu	600101
airaj@gmail.com	Tirupathi	Andhra Pradesh	517101

Page 1 of 1

Feedback Implementation:

- 1) List all brands and their models

```
select b.brandID,b.brandName,cm.modelID from brand b
inner join Car_Model cm
on b.brandID=cm.brandID
order by b.brandID
```

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Results		Messages	
	brandID	brandName	modelID
1	BR100	Hyundai	MO100
2	BR100	Hyundai	MO106
3	BR101	Audi	MO107
4	BR101	Audi	MO101
5	BR102	Mercedes Benz	MO102
6	BR102	Mercedes Benz	MO109
7	BR103	Toyota	MO103
8	BR103	Toyota	MO111
9	BR104	Renault	MO104
10	BR104	Renault	MO110
11	BR105	Ford	MO108
12	BR105	Ford	MO105
13	BR106	Tesla	MO112

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\adganesh (135) | IST659_M003_adganesh | 00:00:00 | 13 rows

Report:

IST 659 - PROJECT IMPLEMENTATION REPORT – ADITYA GANESH

car_model_new

brandID	brandName	modelID
BR100	Hyundai	MO100
		MO106
BR101	Audi	MO101
		MO107
BR102	Mercedes Benz	MO102
		MO109
BR103	Toyota	MO103
		MO111
BR104	Renault	MO104
		MO110
BR105	Ford	MO105
		MO108
BR106	Tesla	MO112

Sunday, April 28, 2019

Page 1 of 1

2) Add a form: allow to create /add new car model to db

Car Model

brandID

brandName

modelID

vehicleID

engineID

startingPrice

←
Add Record
→

Record: 7 of 13 No Filter Search

3) **Data Question 2:** Add Car Model in the select statement to show which model gives the best mileage.

```
select brandName,modelID,fuelType,mileageCity from(select
b.brandName,cm.modelID,f.fuelType,f.mileageCity,rank() over(partition by fuelType order by
mileageCity desc)as rnk from brand b
inner join Car_Model cm
on b.brandID=cm.brandID
inner join Car_Fuel_Model_Details fu
on cm.modelID=fu.modelID
inner join Fuel f
on fu.fuelID=f.fuelID)rnk
where rnk=1;
```

Results		Messages		
	brandName	modelID	fuelType	mileageCity
1	Audi	MO101	Diesel	22.4
2	Ford	MO105	Petrol	20.4

Query executed successfully. ist-s-students.syr.edu (12.... AD\adganes (135) IST659_M003_adganes 00:00:00 2 rows