

Database Management System For A Car Dealership

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Problem Statement

Design a database management system for a car dealership that will enable them to efficiently manage their business operations. The system should allow them to keep track of their, new and used car inventory, customization options, sales transactions, financing and insurance policies, warranties, and customer information. It should also enable them to track their sales personnel and monitor their performance. The system should be able to generate reports and perform data analysis to provide insights into their business performance.

Goal

The goal of this project is to create a comprehensive database management system that will streamline the car dealership's operations, improve customer service, and increase sales.

Creation of Tables:

We have created 23 different tables which stores different data as given with the respective columns.

cuzip

- zip num pk
- city varchar
- state char

CarCustomer

- custId VARCHAR pk
- firstName varchar
- lastName varchar
- street varchar
- zip num
- areaCode num
- phoneNumber num
- driversLicNo varchar unique
- referredBy varchar
- adSeen varchar

CarAd

- placedIn VARCHAR2 pk
- initialDate datatype pk
- totalCost NUM
- frequency NUM
- contactPerson VARCHAR
- areaCode NUM
- phoneNumber NUM

CarNewCar

- VIN VARCHAR pk
- make VARCHAR
- model VARCHAR fk
- listPrice NUM
- dateManufactured DATE
- placeManufactured VARCHAR
- color VARCHAR
- delDate DATE
- delMiles NUM

CarRegistration

- registrationNo VARCHAR pk
- plateNo VARCHAR
- fee NUM

InsuranceCompanyName

- companyName VARCHAR2 pk
- street VARCHAR
- zip NUM fk
- areaCode NUM
- phoneNumber VARCHAR

InsurancePolicy

- insPolicyNo VARCHAR pk
- companyName VARCHAR
- startDate DATE
- endDate DATE

In_Zip

- zip NUM pk
- state VARCHAR
- city VARCHAR2

FinanceCompany

- companyName VARCHAR pk
- street VARCHAR
- zip NUM

FinanceZip

- zip NUM pk
- city VARCHAR
- state VARCHAR

FinancedCar

- finPolicyNo VARCHAR pk
- companyName VARCHAR fk
- amountFinanced NUM

FinancedAmount

- amountFinanced NUM pk
- rate NUM
- numberMonths NUM
- startDate DATE

CarWarranty

- warType VARCHAR pk
- cost NUM
- period NUM

CarUsedCarVIN

- VIN VARCHAR pk
- make VARCHAR
- model VARCHAR
- color VARCHAR
- modelYear NUM
- mileage NUM
- bookValue NUM

CarUsedCarSpec

- model VARCHAR pk
- cylinders VARCHAR
- doors NUM
- weight NUM
- capacity NUM

CarUsedCarFeatures

- VIN VARCHAR2
- feature VACHAR

CarSale

- invoiceNo VARCHAR pk
- saleDate DATE
- salePrice NUM
- taxNUM
- registrationFee NUM
- tradeinAmount NUM
- amountPaid NUM
- amountDue NUM
- commission NUM
- saleMiles NUM
- custId VARCHAR
- empId VARCHAR
- newCarVIN VARCHAR
- usedCarVIN VARCHAR
- insPolNo VARCHAR
- insCoName VARCHAR
- finPolNo VARCHAR
- finCoName VARCHAR
- tradeInVIN VARCHAR
- registrationNo VARCHARL
- warType VARCHAR

CarSale_CustomItem

- invoiceNo VARCHAR
- customItem VARCHAR

CarSurvey

- surveyNumber NUM pk
- dealershipRating NUM
- carRating NUM
- salesPersonRating NUM
- invoiceNo VARCHAR

CarModel

- model VARCHAR pk
- cylinders NUMBER
- doors NUMBER
- weight NUMBER
- capacity NUMBER

CarOptionsMenu

- carOption VARCHAR pk
- price NUMBER

CarNewCar_Options

- VIN VARCHAR pk
- carOption VARCHAR fk

CarCustomizationMenu

- customItem VARCHAR pk
- price NUMBER

CarSalesPerson

- empId VARCHAR pk
- firstName VARCHAR
- lastName VARCHAR
- street VARCHAR
- zip CHAR
- homeAreaCode CHAR
- homePhoneNumber NUMBER
- officeAreaCode CHAR
- officePhoneNumber NUM
- cellAreaCode CHAR
- cellPhoneNumber NUM
- dateHired DATE

SalesPZip

- zip CHAR
- city CHAR
- state CHAR

The "CuZip" table is likely meant to store information about zip codes, cities, and states for the car dealership's customers. The table is designed to ensure that each zip code is unique in the table, as it is the primary key. This table could be used to join with other tables that store customer information, such

as the "Car Customer" table, to provide location-based insights or analysis.

```
SQL> CREATE TABLE CuZip(  
2     zip NUMBER NOT NULL,  
3     city VARCHAR2(15) NULL,  
4     state CHAR(15) NULL,  
5     PRIMARY KEY (zip)  
6 );  
  
Table created.  
  
SQL> INSERT INTO CuZip VALUES(10036,'NYC','NY');  
  
1 row created.  
  
SQL> INSERT INTO CuZip VALUES(10126,'NYC','NY');  
  
1 row created.  
  
SQL> INSERT INTO CuZip VALUES(10246,'NYC','NY');  
  
1 row created.  
  
SQL> INSERT INTO CuZip VALUES(10456,'NYC','NY');  
  
1 row created.  
  
SQL> INSERT INTO CuZip VALUES(10636,'NYC','NY');  
  
1 row created.
```

The above SQL code contains five INSERT statements that insert new rows into the "CuZip" table. Each row contains a zip code, city name, and state.

The table has a primary key constraint on the "custId" column to ensure that each customer has a unique identifier, and a unique constraint on the "driversLicNo" column to ensure that no two customers have the same driver's license number. This table could be used to store customer information and link it to other tables such as the "Car Ad" or "Car Sale" tables for analysis and reporting.

```
SQL> CREATE TABLE CarCustomer(  
2     custId VARCHAR2(15) NOT NULL,  
3     firstName VARCHAR2(15) NOT NULL,  
4     lastName VARCHAR2(15) NOT NULL,  
5     street VARCHAR2(45) NULL,  
6     zip NUMBER NULL,  
7     areaCode NUMBER NULL,  
8     phoneNumber VARCHAR2(12) NULL,  
9     driversLicNo VARCHAR2(12) NULL,  
10    referredBy VARCHAR2(15) NULL,  
11    adSeen VARCHAR2(10) NULL,  
12    PRIMARY KEY (custId),  
13    UNIQUE (driversLicNo));  
  
Table created.
```

```

SQL> INSERT INTO CarCustomer VALUES('NY2221','Vicktoria','Grillo','32street',10036,213,2132442123,'DL1
233212','Billy','CarAd');

1 row created.

SQL> INSERT INTO CarCustomer VALUES('NH123','Billy','Stark','31street',10126,213,2132342133,'DL1223421
2','Will','CarAd');

1 row created.

SQL> INSERT INTO CarCustomer VALUES('NJ2321','Siamon','Rollens','22street',10246,112,1123442123,'D2342
33212','Billy','CarAd');

1 row created.

SQL> INSERT INTO CarCustomer VALUES('NY324123','Will','Hens','45street',10456,213,2134324623,'DL123324
2312','Will','CarAd');

1 row created.

SQL> INSERT INTO CarCustomer VALUES('NH4234','Steven','Cook','42street',10636,332,3322234523,'DL123432
2','Will','CarAd');

```

```

SQL> CREATE TABLE CarAd(
2   placedIn VARCHAR2(10) NOT NULL,
3   initialDate DATE NOT NULL,
4   totalCost NUMBER,
5   frequency NUMBER,
6   contactPerson VARCHAR2(15),
7   areaCode NUMBER(12) ,
8   phoneNumber NUMBER(12),
9   CONSTRAINT Pk_palcedate PRIMARY KEY (placedIn, initialDate));

Table created.

SQL> INSERT INTO CarAd VALUES('NY',TO_DATE('2022/01/01','yyyy/mm/dd'),1000,12,'Vicktoria',10036,213244
2123);

1 row created.

SQL> INSERT INTO CarAd VALUES('NJ',TO_DATE('2022/02/23','yyyy/mm/dd'),1200,12,'Simon',13336,2132344212
3);

1 row created.

SQL> INSERT INTO CarAd VALUES('CA',TO_DATE('2022/01/25','yyyy/mm/dd'),1500,12,'Will',10236,3221432123)
;

1 row created.

SQL> INSERT INTO CarAd VALUES('NY',TO_DATE('2022/03/01','yyyy/mm/dd'),1800,12,'Billy',11036,1232143212
);

1 row created.

SQL> INSERT INTO CarAd VALUES('NY',TO_DATE('2022/02/22','yyyy/mm/dd'),1700,12,'Sam',10236,421342123);

1 row created.

```

```

SQL> CREATE TABLE CarNewCar (
2   VIN VARCHAR2(45) NOT NULL,
3   make VARCHAR2(45) NULL,
4   model VARCHAR2(45) NOT NULL,
5   listPrice NUMBER NULL,
6   dateManufactured DATE NULL,
7   placeManufactured VARCHAR2(45) NULL,
8   color VARCHAR2(20) NULL,
9   delDate DATE NULL,
10  delMiles NUMBER NULL,
11  PRIMARY KEY (VIN));

Table created.

```



```

SQL>
SQL> INSERT INTO CarNewCar VALUES('4Y1SL65848Z411439','ford','figo',20000,TO_DATE('2020/01/01','yyyy/mm/dd'),'NYC','white',TO_DATE('2020/05/01','yyyy/mm/dd'),0);

1 row created.

SQL> INSERT INTO CarNewCar VALUES('4Y1SL65848Z411438','Honda','city',30000,TO_DATE('2021/01/01','yyyy/mm/dd'),'NJ','black',TO_DATE('2021/05/01','yyyy/mm/dd'),0);

1 row created.

SQL> INSERT INTO CarNewCar VALUES('4Y1SL65848Z411437','Audi','A4',40000,TO_DATE('2020/02/01','yyyy/mm/dd'),'CA','black',TO_DATE('2020/05/01','yyyy/mm/dd'),0);

1 row created.

SQL> INSERT INTO CarNewCar VALUES('4Y1SL65848Z411436','Audi','A3',45000,TO_DATE('2020/03/21','yyyy/mm/dd'),'NJ','white',TO_DATE('2020/05/01','yyyy/mm/dd'),0);

1 row created.

```

```

SQL> CREATE TABLE CarModel(
2     model VARCHAR2(45) NOT NULL,
3     cylinders NUMBER NULL,
4     doors NUMBER NULL,
5     weight NUMBER NULL,
6     capacity NUMBER NULL,
7     PRIMARY KEY(model)
8 );

Table created.

SQL> INSERT INTO CarModel VALUES ('figo',4,2,100,4);

1 row created.

SQL> INSERT INTO CarModel VALUES ('city',4,2,100,4);

1 row created.

SQL> INSERT INTO CarModel VALUES ('A4',4,2,100,4);

1 row created.

SQL> INSERT INTO CarModel VALUES ('A3',4,2,100,4);

1 row created.

SQL> INSERT INTO CarModel VALUES ('feasta',4,2,100,4);

1 row created.

```

```

SQL> CREATE TABLE CarOptionsMenu(
2     carOption VARCHAR2(10) NOT NULL,
3     price NUMBER NULL,
4     PRIMARY KEY (carOption)
5 );

Table created.

SQL> INSERT INTO CarOptionsMenu VALUES('City',23000)
2 INSERT INTO CarOptionsMenu VALUES('CityPro',29000);
INSERT INTO CarOptionsMenu VALUES('CityPro',29000)
*
```

```
SQL> INSERT INTO CarOptionsMenu VALUES('CityLight',21000);
```

```
1 row created.
```

```
SQL> INSERT INTO CarOptionsMenu VALUES('Duo',43000);
```

```
1 row created.
```

```
SQL> INSERT INTO CarOptionsMenu VALUES('XUV',33000);
```

```
1 row created.
```

```
SQL> INSERT INTO CarOptionsMenu VALUES('City',23000);
```

```
1 row created.
```

```
SQL> CREATE TABLE CarNewCar_Options (  
2     VIN VARCHAR2(20) NOT NULL,  
3     carOption VARCHAR2(20) NULL,  
4     PRIMARY KEY (VIN),  
5     CONSTRAINT carOption_fk FOREIGN KEY (carOption) REFERENCES CarOptionsMenu(carOption)  
6 );
```

```
Table created.
```

```
SQL> INSERT INTO CarNewCar_Options VALUES('4Y1SL65848Z411439','City');
```

```
SQL> INSERT INTO CarNewCar_Options VALUES('4Y1SL65848Z411439','City');
```

```
1 row created.
```

```
SQL> INSERT INTO CarNewCar_Options VALUES('4Y1SL65848Z411438','CityPro');  
INSERT INTO CarNewCar_Options VALUES('4Y1SL65848Z411438','CityPro')
```

```
*
```

```
ERROR at line 1:
```

```
ORA-02291: integrity constraint (SYS.CAROPTION_FK) violated - parent key not  
found
```

```
SQL> INSERT INTO CarNewCar_Options VALUES('4Y1SL65848Z411437','CityLight');
```

```
1 row created.
```

```
SQL> INSERT INTO CarNewCar_Options VALUES('4Y1SL65848Z411436','Duo');
```

```
1 row created.
```

```
SQL> INSERT INTO CarNewCar_Options VALUES('4Y1SL65848Z411435','XUV');
```

```
1 row created.
```

```

SQL> CREATE TABLE CarCustomizationMenu (
2     customItem VARCHAR2(15) NOT NULL,
3     price NUMBER NULL,
4     PRIMARY KEY (customItem)
5 );

Table created.

SQL> INSERT INTO CarCustomizationMenu VALUES('color',1500);

1 row created.

SQL> INSERT INTO CarCustomizationMenu VALUES('door',3000);

1 row created.

SQL> INSERT INTO CarCustomizationMenu VALUES('light',1500);

1 row created.

SQL> INSERT INTO CarCustomizationMenu VALUES('handel',1000);

1 row created.

```

```

SQL> CREATE TABLE CarSalesPerson(
2     empId VARCHAR2(15) NOT NULL,
3     firstName VARCHAR2(15) NULL,
4     lastName VARCHAR2(15) NULL,
5     street VARCHAR2(15) NULL,
6     zip CHAR(15) NOT NULL,
7     homeAreaCode CHAR(15) NULL,
8     homePhoneNumber NUMBER NULL,
9     officeAreaCode CHAR(15) NULL,
10    officePhoneNumber NUMBER NULL,
11    cellAreaCode CHAR(15) NULL,
12    cellPhoneNumber NUMBER NULL,
13    dateHired DATE NULL,
14    PRIMARY KEY (empId));

Table created.

SQL> INSERT INTO CarSalesPerson VALUES('em001','Vicktoria','Grillo','32street',10036,'','','','+1',
3213212321,TO_DATE('2021/06/11','yyyy/mm/dd'));

1 row created.

SQL> INSERT INTO CarSalesPerson VALUES('em002','Brayan','Kung','21peterson',10032,'','','','+1',234
1234321,TO_DATE('2021/02/11','yyyy/mm/dd'));

1 row created.

SQL> INSERT INTO CarSalesPerson VALUES('em003','Tom','Cruise','4street',10033,'','','','+1',3213232
1343,TO_DATE('2021/03/23','yyyy/mm/dd'));

1 row created.

SQL> INSERT INTO CarSalesPerson VALUES('em004','Chandler','Bing','24street',40036,'','','','+1',321
3212342,TO_DATE('2021/04/22','yyyy/mm/dd'));

1 row created.

SQL> INSERT INTO CarSalesPerson VALUES('em005','Sheldon','Cooper','22street',50036,'','','','+1',32
1322432,TO_DATE('2021/07/21','yyyy/mm/dd'));

1 row created.

```

```

SQL> CREATE TABLE SalesPZip(
2     zip CHAR(15) NOT NULL,
3     city CHAR(15) NULL,
4     state CHAR(15) NULL
5 );

Table created.

```

```
SQL> INSERT INTO SalesPZip VALUES(10036,'NYC','NY');

1 row created.

SQL> INSERT INTO SalesPZip VALUES(10032,'NYC','NY');

1 row created.

SQL> INSERT INTO SalesPZip VALUES(10033,'NYC','NY');

1 row created.

SQL> INSERT INTO SalesPZip VALUES(40036,'NYC','NY');

1 row created.

SQL> INSERT INTO SalesPZip VALUES(50036,'NYC','NY');
```

```
SQL> CREATE TABLE CarRegistration(
 2   registrationNo VARCHAR2(15) NOT NULL,
 3   plateNo VARCHAR2(15) NULL,
 4   fee NUMBER NULL,
 5   PRIMARY KEY (registrationNo)
 6 );

Table created.

SQL> INSERT INTO CarRegistration VALUES('1232RC','LT01234',100);

1 row created.

SQL> INSERT INTO CarRegistration VALUES('1233RC','LT01235',100);

1 row created.

SQL> INSERT INTO CarRegistration VALUES('1234RC','LT01236',100);

1 row created.

SQL> INSERT INTO CarRegistration VALUES('1235RC','LT01237',100);

1 row created.

SQL> INSERT INTO CarRegistration VALUES('1236RC','LT01238',100);

1 row created.
```

```
SQL> CREATE TABLE InsuranceCompanyName(
 2   companyName VARCHAR2(30) NOT NULL,
 3   street VARCHAR2(45) NULL,
 4   zip NUMBER NOT NULL,
 5   areaCode NUMBER NULL,
 6   phoneNumber VARCHAR2(12) NULL,
 7   PRIMARY KEY (companyName));

Table created.
```

```

SQL> INSERT INTO InsuranceCompanyName VALUES('Reliance','Spruce',10036,+1,2154466257);

1 row created.

SQL> INSERT INTO InsuranceCompanyName VALUES('TataMotors','Manhattan ave',10036,+1,2154466245);

1 row created.

SQL> INSERT INTO InsuranceCompanyName VALUES('Reliance','Beach Street',10036,+1,2154466241);
INSERT INTO InsuranceCompanyName VALUES('Reliance','Beach Street',10036,+1,2154466241)
*
ERROR at line 1:
ORA-00001: unique constraint (SYS.SYS_C008373) violated

SQL> INSERT INTO InsuranceCompanyName VALUES('HD1L','Carlton ave',10036,+1,2154466789);

1 row created.

SQL> INSERT INTO InsuranceCompanyName VALUES('Wills','9th street',10036,+1,2154466547);

1 row created.

SQL> INSERT INTO InsuranceCompanyName VALUES('lic','Beach Street',10036,+1,2154466241);

1 row created.

```

```

SQL> CREATE TABLE InsurancePolicy(
2     insPolicyNo VARCHAR2(15) NOT NULL,
3     companyName VARCHAR2(30) NOT NULL,
4     startDate DATE NULL,
5     endDate DATE NULL,
6     PRIMARY KEY (insPolicyNo));

Table created.

SQL> INSERT INTO InsurancePolicy('4Y1SL65439-A1','Reliance',TO_DATE('2021/01/01','yyyy/mm/dd'),TO_DATE('2022/01/01','yyyy/mm/dd'));
INSERT INTO InsurancePolicy('4Y1SL65439-A1','Reliance',TO_DATE('2021/01/01','yyyy/mm/dd'),TO_DATE('202

```

```

SQL> INSERT INTO InsurancePolicy VALUES('4Y1SL65839-A2','TataMotors',TO_DATE('2021/11/11','yyyy/mm/dd'),TO_DATE('2022/11/11','yyyy/mm/dd'));

1 row created.

SQL> INSERT INTO InsurancePolicy VALUES('4Y1SL65Z49-A3','Reliance',TO_DATE('2021/02/05','yyyy/mm/dd'),TO_DATE('2022/02/05','yyyy/mm/dd'));

1 row created.

SQL> INSERT INTO InsurancePolicy VALUES('4Y1SL65849-A4','HD1L',TO_DATE('2021/10/06','yyyy/mm/dd'),TO_DATE('2022/10/06','yyyy/mm/dd'));

1 row created.

SQL> INSERT INTO InsurancePolicy VALUES('4Y1SL65839-A5','Wills',TO_DATE('2021/08/22','yyyy/mm/dd'),TO_DATE('2022/08/22','yyyy/mm/dd'));

1 row created.

```

```

TE('2022/01/01','yyyy/mm/dd'));

```

```

1 row created.

```

```

SQL> CREATE TABLE In_Zip(
2     zip NUMBER NOT NULL,
3     state VARCHAR2(15) NULL,
4     city VARCHAR2(15) NULL,
5     PRIMARY KEY (zip)
6 );

```

```

Table created.

```

```
SQL> INSERT INTO In_Zip VALUES(10035,'NYC','NY');

1 row created.

SQL> INSERT INTO In_Zip VALUES(10037,'NYC','NY');

1 row created.

SQL> INSERT INTO In_Zip VALUES(10038,'NYC','NY');

1 row created.

SQL> INSERT INTO In_Zip VALUES(10030,'NYC','NY');

1 row created.
```

```
SQL> CREATE TABLE FinanceCompany(
  2     companyName VARCHAR2(30) NOT NULL,
  3     street VARCHAR2(45) NULL,
  4     zip NUMBER NOT NULL,
  5     PRIMARY KEY (companyName));
```

Table created.

```
SQL> INSERT INTO FinanceCompany VALUES('Reliance','Spruce','NYC','NY',10036,+1,2154466257,TO_DATE('2021/01/01','yyyy/mm/dd'),20000,10,60);
INSERT INTO FinanceCompany VALUES('Reliance','Spruce','NYC','NY',10036,+1,2154466257,TO_DATE('2021/01/01','yyyy/mm/dd'),20000,10,60)
```

```
SQL> INSERT INTO FinanceCompany VALUES('Reliance','Spruce',10036);

1 row created.

SQL> INSERT INTO FinanceCompany VALUES('TataMotors','Manhattan ave',10036);

1 row created.

SQL> INSERT INTO FinanceCompany VALUES('Reliance','Beach Street',10036);
INSERT INTO FinanceCompany VALUES('Reliance','Beach Street',10036)
*
ERROR at line 1:
ORA-00001: unique constraint (SYS.SYS_C008381) violated

SQL> INSERT INTO FinanceCompany VALUES('HDIL','Carlton ave',10036);

1 row created.

SQL> INSERT INTO FinanceCompany VALUES('Wills','9th street',10036);

1 row created.

SQL> INSERT INTO FinanceCompany VALUES('lic','Beach Street',10036);

1 row created.
```

```
SQL> CREATE TABLE FinanceZip(
2     zip NUMBER NOT NULL,
3     city VARCHAR2(15) NULL,
4     state VARCHAR2(15) NULL,
5     PRIMARY KEY (zip)
6 );

Table created.

SQL> INSERT INTO FinanceZip VALUES (10036,'NYC','NY');

1 row created.

SQL> INSERT INTO FinanceZip VALUES (10035,'NYC','NY');

1 row created.

SQL> INSERT INTO FinanceZip VALUES (10037,'NYC','NY');

1 row created.

SQL> INSERT INTO FinanceZip VALUES (10038,'NYC','NY');

1 row created.

SQL> INSERT INTO FinanceZip VALUES (10030,'NYC','NY');

1 row created.
```

```
SQL> CREATE TABLE FinancedCar(  
2     finPolicyNo VARCHAR2(20) NOT NULL,  
3     companyName VARCHAR2(30) NOT NULL,  
4     amountFinanced NUMBER NOT NULL,  
5     PRIMARY KEY(finPolicyNo),  
6     CONSTRAINT FicompanyName_fk FOREIGN KEY (companyName) REFERENCES FinanceCompany(companyName))  
;
```

Table created.

```
SQL> INSERT INTO FinancedCar VALUES('4Y1SL65848Z411440-F1','Reliance',20000);
```

1 row created.

```
SQL> INSERT INTO FinancedCar VALUES('4Y1SL65848Z411444-F2','TataMotors',15500);
```

1 row created.

```
SQL> INSERT INTO FinancedCar VALUES('4Y1SL65848Z411446-F3','Reliance',25000);
```

1 row created.

```
SQL> INSERT INTO FinancedCar VALUES('4Y1SL65848Z411485-F4','HD1L',16000);
```

1 row created.

```
SQL> INSERT INTO FinancedCar VALUES('4Y1SL65848Z411496-F5','Wills',17000);
```

1 row created.

1 row created.

```
SQL> CREATE TABLE FinancedAmount(  
2     amountFinanced NUMBER NOT NULL,  
3     rate NUMBER NULL,  
4     numberMonths NUMBER NULL,  
5     startDate DATE NULL,  
6     PRIMARY KEY (amountFinanced)  
7 );
```

Table created.

```
SQL> INSERT INTO FinancedAmount VALUES(20000,10,100,TO_DATE('2021/01/01','yyyy/mm/dd'));
```

1 row created.

```
SQL> INSERT INTO FinancedAmount VALUES(36000,10,100,TO_DATE('2021/11/11','yyyy/mm/dd'));
```

1 row created.

```
SQL> INSERT INTO FinancedAmount VALUES(25000,10,100,TO_DATE('2021/02/05','yyyy/mm/dd'));
```

1 row created.

```
SQL> INSERT INTO FinancedAmount VALUES(27000,10,100,TO_DATE('2021/10/06','yyyy/mm/dd'));
```

1 row created.

```
SQL> INSERT INTO FinancedAmount VALUES(29000,10,100,TO_DATE('2021/08/22','yyyy/mm/dd'));
```

1 row created.


```

SQL> CREATE TABLE CarWarranty (
2   warType VARCHAR2(15) NOT NULL,
3   cost NUMBER NULL,
4   period NUMBER NULL,
5   PRIMARY KEY (warType)
6 );

Table created.

SQL> INSERT INTO CarWarranty VALUES('BtoB',2000,1.5);

1 row created.

SQL> INSERT INTO CarWarranty VALUES('Rust',3000,3);

1 row created.

SQL> INSERT INTO CarWarranty VALUES('Powertrain',2500,2);

1 row created.

```

```

SQL> CREATE TABLE CarUsedCarVIN (
2   VIN VARCHAR2(20) NOT NULL,
3   make VARCHAR2(20) NULL,
4   model VARCHAR2(20) NOT NULL,
5   color VARCHAR2(20) NULL,
6   modelYear NUMBER NULL,
7   mileage NUMBER NULL,
8   bookValue NUMBER NULL,
9   PRIMARY KEY (VIN));

Table created.

SQL> INSERT INTO CarUsedCarVIN Values('4Y1SL65848Z411449','ford','figo','white',2021,1500,15000);

1 row created.

SQL> INSERT INTO CarUsedCarVIN Values('4Y1SL65848Z411448','Honda','city','black', 2015, 1000, 10000);

1 row created.

SQL> INSERT INTO CarUsedCarVIN Values('4Y1SL65848Z411447','Audi','A4','black', 2016,1000,16000);

1 row created.

SQL> INSERT INTO CarUsedCarVIN Values('4Y1SL65848Z411446','Audi','A3','white',2013,800,13000);

1 row created.

SQL> INSERT INTO CarUsedCarVIN Values('4Y1SL65848Z411445','ford','feasta','blue',2017,1100,15000);

1 row created.

```

```

SQL> CREATE TABLE CarUsedCarSpec(
2   model VARCHAR2(20) NOT NULL,
3   cylinders VARCHAR2(20) NULL,
4   doors NUMBER NULL,
5   weight NUMBER NULL,
6   capacity NUMBER NULL,
7   PRIMARY KEY (model)
8 );

Table created.

SQL> INSERT INTO CarUsedCarSpec VALUES('figo',4,2,1000,4);

```

```

SQL> INSERT INTO CarUsedCarSpec VALUES('figo',4,2,1000,4);

1 row created.

SQL> INSERT INTO CarUsedCarSpec VALUES('city',4,2,1500,4);

1 row created.

SQL> INSERT INTO CarUsedCarSpec VALUES('A4',8,4,2600,8);

1 row created.

SQL> INSERT INTO CarUsedCarSpec VALUES('A3',4,2,1000,4);

1 row created.

SQL> INSERT INTO CarUsedCarSpec VALUES('feasta',4,2,1700,4);

1 row created.

```

```

SQL> CREATE TABLE CarUsedCarFeatures (
  2   VIN VARCHAR2(20) NOT NULL,
  3   feature VARCHAR2(45) NOT NULL);

Table created.

SQL> INSERT INTO CarUsedCarFeatures VALUES('4Y1SL65848Z411449','color');

1 row created.

SQL> INSERT INTO CarUsedCarFeatures VALUES('4Y1SL65848Z411448','door');

1 row created.

SQL> INSERT INTO CarUsedCarFeatures VALUES('4Y1SL65848Z411447','light');

1 row created.

SQL> INSERT INTO CarUsedCarFeatures VALUES('4Y1SL65848Z411446','handle');

1 row created.

SQL> INSERT INTO CarUsedCarFeatures VALUES('4Y1SL65848Z411445','mirror');

1 row created.

```

```

SQL> CREATE TABLE CarSale(
  2   invoiceNo VARCHAR2(20) NOT NULL,
  3   saleDate DATE NULL,
  4   salePrice NUMBER NULL,
  5   tax NUMBER NULL,
  6   registrationFee NUMBER NULL,
  7   tradeinAmount NUMBER NULL,
  8   amountPaid NUMBER NULL,
  9   amountDue NUMBER NULL,
 10   commission NUMBER NULL,
 11   saleMiles NUMBER NULL,
 12   custId VARCHAR2(20) NOT NULL,
 13   empId VARCHAR2(20) NOT NULL,
 14   newCarVIN VARCHAR2(20) NOT NULL,
 15   usedCarVIN VARCHAR2(20) NOT NULL,
 16   insPolNo VARCHAR2(15) NOT NULL,
 17   insCoName VARCHAR2(15) NOT NULL,
 18   finPolNo VARCHAR2(20) NOT NULL,
 19   finCoName VARCHAR2(20) NOT NULL,
 20   tradeInVIN VARCHAR2(20) NULL,
 21   registrationNo VARCHAR2(20) NOT NULL,
 22   warType VARCHAR2(20) NOT NULL,
 23   PRIMARY KEY (invoiceNo));

Table created.

```

```

SQL> INSERT INTO CarSale VALUES ('C-671',TO_DATE('2021/01/01','yyyy/mm/dd'),40000,5000,100,200,25000,1
5000,100,0,'NY2221','em001',
2 '4Y1SL65848Z411439','N/A','4Y1SL65439-A1','Reliance','4Y1SL65848Z411440-F1','Reliance','N/A','123
2RC','BtoB');

1 row created.

SQL> INSERT INTO CarSale VALUES('C-672',TO_DATE('2021/02/01','yyyy/mm/dd'),50000,5000,100,200,25000,25
000,100,0,'NH123','em002',
2 '4Y1SL65848Z411438','N/A','4Y1SL65839-A2','TataMotors','4Y1SL65848Z411444-F2','TataMotors','N/A',
'1233RC','BtoB');

1 row created.

SQL> INSERT INTO CarSale VALUES('C-673',TO_DATE('2021/03/01','yyyy/mm/dd'),30000,5000,100,200,15000,15
000,100,0,'NJ2321','em003',
2 '4Y1SL65848Z411437','N/A','4Y1SL65439-A1','Reliance','4Y1SL65848Z411440-F1','Reliance','N/A','123
4RC','BtoB');

1 row created.

SQL> INSERT INTO CarSale VALUES('C-674',TO_DATE('2021/02/11','yyyy/mm/dd'),40000,5000,100,200,25000,20
000,100,0,'NY324123','em004',
2 '4Y1SL65848Z411436','N/A','4Y1SL65839-A2','TataMotors','4Y1SL65848Z411444-F2','TataMotors','N/A',
'1235RC','BtoB');

1 row created.

SQL> INSERT INTO CarSale VALUES('C-675',TO_DATE('2021/11/11','yyyy/mm/dd'),50000,5000,100,200,25000,25
000,100,0,'NH4234','em005',
2 '4Y1SL65848Z411435','N/A','4Y1SL65439-A1','Reliance','4Y1SL65848Z411440-F1','Reliance','N/A','123
6RC','BtoB');

1 row created.

```

```

SQL> CREATE TABLE CarSale_CustomItem(
2 invoiceNo VARCHAR2(20) NOT NULL,
3 customItem VARCHAR2(20) NOT NULL,
4
SQL> CREATE TABLE CarSale_CustomItem(
2 invoiceNo VARCHAR2(20) NOT NULL,
3 customItem VARCHAR2(20) NOT NULL);

Table created.

SQL> INSERT INTO CarSale_CustomItem VALUES('C-671','AUDIO SYSTEM');

1 row created.

SQL> INSERT INTO CarSale_CustomItem VALUES('C-672','Bluetooth');

1 row created.

SQL> INSERT INTO CarSale_CustomItem VALUES('C-673','SUNROOF');

1 row created.

SQL> INSERT INTO CarSale_CustomItem VALUES('C-674','Seat cover');

1 row created.

SQL> INSERT INTO CarSale_CustomItem VALUES('C-675','Gear pad');

1 row created.

```

```
SQL> CREATE TABLE CarSurvey(
  2     surveyNumber NUMBER NOT NULL,
  3     dealershipRating NUMBER NULL,
  4     carRating NUMBER NULL,
  5     salesPersonRating NUMBER NULL,
  6     invoiceNo VARCHAR2(20) NOT NULL,
  7     PRIMARY KEY (surveyNumber)
  8 );
```

Table created.

```
SQL> INSERT INTO CarSurvey VALUES(451,8,9,9,'C-671');
```

1 row created.

```
SQL> INSERT INTO CarSurvey VALUES(452,7,8,8,'C-672');
```

1 row created.

```
SQL> INSERT INTO CarSurvey VALUES(453,8,8,8,'C-673');
```

1 row created.

```
SQL> INSERT INTO CarSurvey VALUES(454,8,8,7,'C-674');
```

1 row created.

```
SQL> INSERT INTO CarSurvey VALUES(455,7,8,9,'C-675');
```

1 row created.

Constraints:

Here we have defined the constraint for foreign keys, other constraints such as NOTNULL, UNIQUE,CHECK have been defined while creating the tables.

```
SQL> alter table CarSale
  2 add constraint custId_fk FOREIGN KEY (custId) REFERENCES CarCustomer(custId);
```

Table altered.

```
SQL> alter table CarSale
  2 add constraint empId_fk FOREIGN KEY (empId) REFERENCES CarSalesPerson(empId);
```

Table altered.

```
SQL Plus
SQL> alter table CarSale
  2 add constraint empId_fk FOREIGN KEY (empId) REFERENCES CarSalesPerson(empId);
```

Table altered.

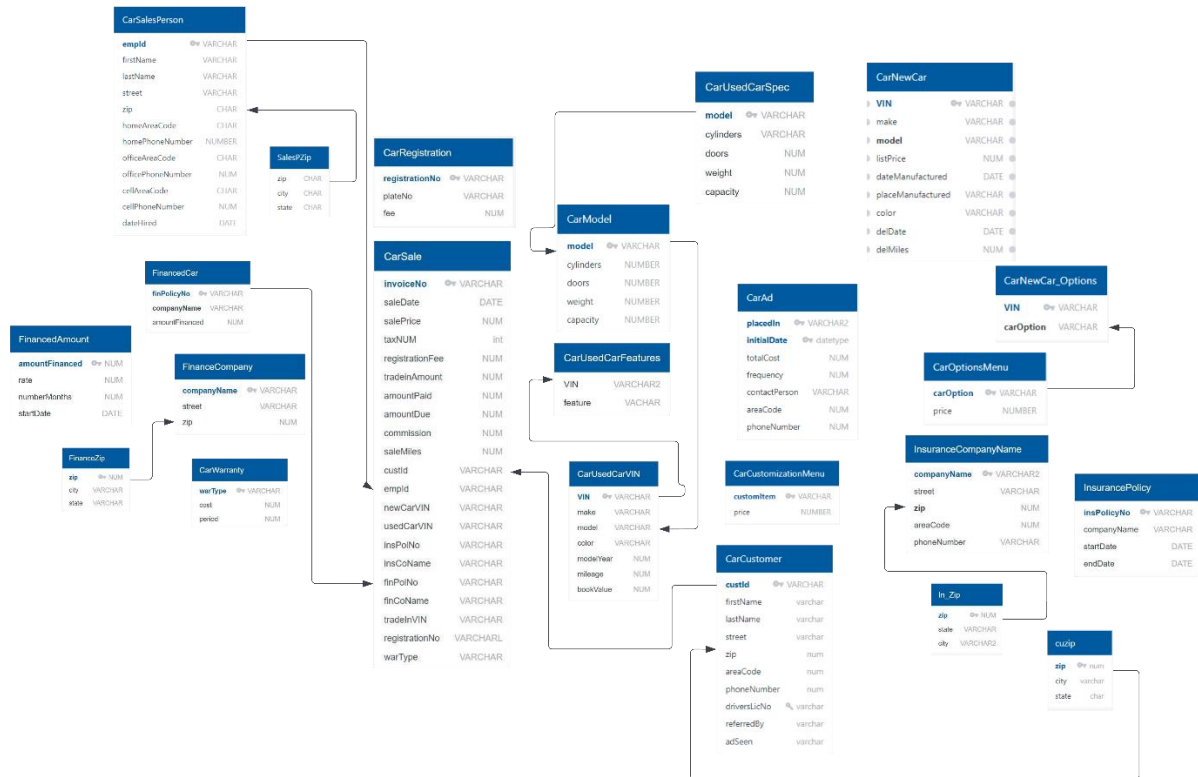
```
SQL> alter table CarSale
```

```
SQL> alter table CarUsedCarFeatures
  2 add constraint VIN_fk FOREIGN KEY (VIN) REFERENCES CarUsedCarVIN(VIN);
```

Table altered.

```
SQL> |
```

The Schema



*please zoom

Relationship from CarSales to other tables

```
CONSTRAINT custId_fk FOREIGN KEY custId REFERENCES CarCustomer
CONSTRAINT empId_fk FOREIGN KEY empId REFERENCES CarSalesPerson
CONSTRAINT newCarVin_fk FOREIGN KEY newCarvin REFERENCES CarNewCar
CONSTRAINT usedCarVin_fk FOREIGN KEY usedCarVin REFERENCES CarUsedCar
CONSTRAINT insPolNo_fk FOREIGN KEY insPolNo REFERENCES CarInsurance
CONSTRAINT insCoName_fk FOREIGN KEY insCoName REFERENCES CarInsurance
CONSTRAINT finPolNo_fk FOREIGN KEY finPolNo REFERENCES CarFinancing
CONSTRAINT finPolName_fk FOREIGN KEY finPolName REFERENCES CarFinancing
CONSTRAINT registrationNo_fk FOREIGN KEY registrationNo REFERENCES
CarRegistration
CONSTRAINT warType_fk FOREIGN KEY warType REFERENCES CarWarranty));
```

Relationship from CarSale_CustomerItem to other tables.

```
CONSTRAINT insPolNo_fk FOREIGN KEY invoiceNo REFERENCES CarSale
CONSTRAINT customItem_fk FOREIGN KEY customItem REFERENCES
CarCustomizationMenu));
```

Relationship from CustomerSurvey to other tables.

```
CONSTRAINT invoiceNo_fk FOREIGN KEY invoiceNo REFERENCES CarSale);
```

Procedures:

This shows how many entries are there in car sale table.

```
SQL> DECLARE
  2   howmany NUMBER(3);
  3 BEGIN
  4
  5   SELECT COUNT(invoiceNo) INTO howmany FROM CarSale;
  6   dbms_output.put_line('This schema owns ' || howmany || ' ENTRIES. ');
  7 END;
  8 /
This schema owns 5 ENTRIES.

PL/SQL procedure successfully completed.
```

Function:

This function gives us the Total Number of Customers.

```
SQL> CREATE OR REPLACE FUNCTION totalCustomers
  2 RETURN number IS
  3   total number(2) := 0;
  4 BEGIN
  5   SELECT count(*) into total
  6   FROM customers;
  7
  8   RETURN total;
  9 END;
 10 /
Function created.

SQL> select * from totalCustomers;
select * from totalCustomers
      *
ERROR at line 1:
ORA-04044: procedure, function, package, or type is not allowed here

SQL> DECLARE
  2   c number(2);
  3 BEGIN
  4   c := totalCustomers();
  5   dbms_output.put_line('Total no. of Customers: ' || c);
  6 END;
  7 /
Total no. of Customers: 20

PL/SQL procedure successfully completed.

SQL> |
```

Views:

This shows selected part of the CarNewCar table.

```
SQL> CREATE VIEW List AS
  2  SELECT VIN, make, model
  3  FROM CarNewCar
  4  ;
```

View created.

```
SQL> SELECT * from List
  2  ;
```

VIN	MAKE	MODEL
4Y1SL65848Z411439	ford	figo
4Y1SL65848Z411438	Honda	city
4Y1SL65848Z411437	Audi	A4
4Y1SL65848Z411436	Audi	A3
4Y1SL65848Z411435	ford	feasta

Index:

This help us to assign lastName and firstName as index for CarSalesPerson.

```
SQL> create index e_name
  2  ON CarSalesPerson(lastName, firstName);
```

Index created.

Use of Clauses:

GROUP BY

```
SQL> Select COUNT(make) from CarUsedCarVIN
  2  GROUP BY make;
```

COUNT(MAKE)
2
1
2

SQL> |

AND

```
SQL> SELECT * FROM CarNewCar
  2  WHERE make = 'Audi' AND color = 'black';
```

VIN	MAKE	MODEL	LISTPRICE	DATAMANUF
4Y1SL65848Z411437	Audi	A4	48000	01-FEB-20
CA	black			

SQL> |

ORDER BY

```
SQL> Select * from CarSurvey  
2 order by dealershipRating desc;
```

SURVEYNUMBER	DEALERSHIPRATING	CARRATING	SALESPERSONRATING	INVOICENO
--------------	------------------	-----------	-------------------	-----------

451	8	9	9	C-671
453	8	8	8	C-673
454	8	8	7	C-674
455	7	8	9	C-675
452	7	8	8	C-672

AGGREGATE FUNCTIONS:

MAXIMUM AND MINIMUM FUNCTION

```
SQL> Select max(salePrice) FROM CarSale;
```

MAX(SALEPRICE)

50000

```
SQL> Select min(salePrice) FROM CarSale;
```

MIN(SALEPRICE)

30000

COUNT FUNCTION

```
SQL> SELECT COUNT(surveyNumber) from CarSurvey;

COUNT(SURVEYNUMBER)
-----
                    5
```

AVERAGE FUNCTION

```
SQL> Select avg(salePrice) FROM CarSale;

AVG(SALEPRICE)
-----
          42000

SQL> |
```

SUM FUNCTION

```
SQL>
SQL> SELECT sum(salePrice) from CarSale;

SUM(SALEPRICE)
-----
          210000
```

NESTED QUERY:

```
SQL> Select * from CarSurvey
      2 where salesPersonRating > (select avg(salesPersonRating) from CarSurvey);
```

```
SURVEYNUMBER DEALERSHIPRATING CARRATING SALESPERSONRATING INVOICENO
```

```
-----
```

451	8	9	9 C-671
455	7	8	9 C-675

```
SQL> Select * from FinancedAmount
      2 where amountFinanced > ( select min(amountFinanced) from FinancedAmount);
```

```
AMOUNTFINANCED      RATE NUMBERMONTHS STARTDATE
```

```
-----
```

25000	10	100	05-FEB-21
27000	10	100	06-OCT-21
29000	10	100	22-AUG-21
36000	10	100	11-NOV-21

SCALAR SUBQUERY:

```
SQL> select (select MAX(commission) from CarSale), (select avg(amountPaid) from CarSale), finCoName FROM CarSale, (Select
t companyName from FinanceCompany where companyName = 'Reliance');
```

```
(SELECTMAX(COMMISSION)FROMCARSALE) (SELECTAVG(AMOUNTPAID)FROMCARSALE) FINCONAME
```

```
-----
```

100	23000	Reliance
100	23000	TataMotors
100	23000	Reliance
100	23000	TataMotors
100	23000	Reliance

```
SQL> |
```

CONCLUSION:

In conclusion, the database management system designed for the car dealership will provide an efficient and effective solution for managing their business operations. With the ability to track inventory, sales transactions, financing, and insurance policies, as well as customer and sales personnel information, the system will improve overall business performance and customer service. The ability to generate reports and perform data analysis will provide valuable insights into the dealership's performance and allow for informed decision-making. Ultimately, the system will increase sales and support the growth of the dealership.