

# Term Project

INFO 605 • Professor Stephen Frein

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## Requirements

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Our database is designed to serve the needs of a small team of auto brokers known collectively as the CC Auto Team. In this scenario, potential customers approach the CC Auto Team when they are interested in possibly purchasing a car.

In this database, each CC Auto Team auto broker is primarily identified by their unique broker identification number, though their first name, last name, phone number, email address, and fee per car are all also recorded. When a customer first contacts CC Auto Team about purchasing a car, a broker will create a file for them that contains their first name, last name, address (street, city, state, and zip code), phone number(s), email address, birthdate, social security number, driver's license number, and gross monthly income. A broker will also pull the customer's credit score and create a uniquely identifiable customer identification number that will be assigned to their file. This information will be kept in the database regardless of if a customer decides to hire a CC Auto Team broker or not. Brokers may work with multiple customers at once, but a customer will only work with a single broker.

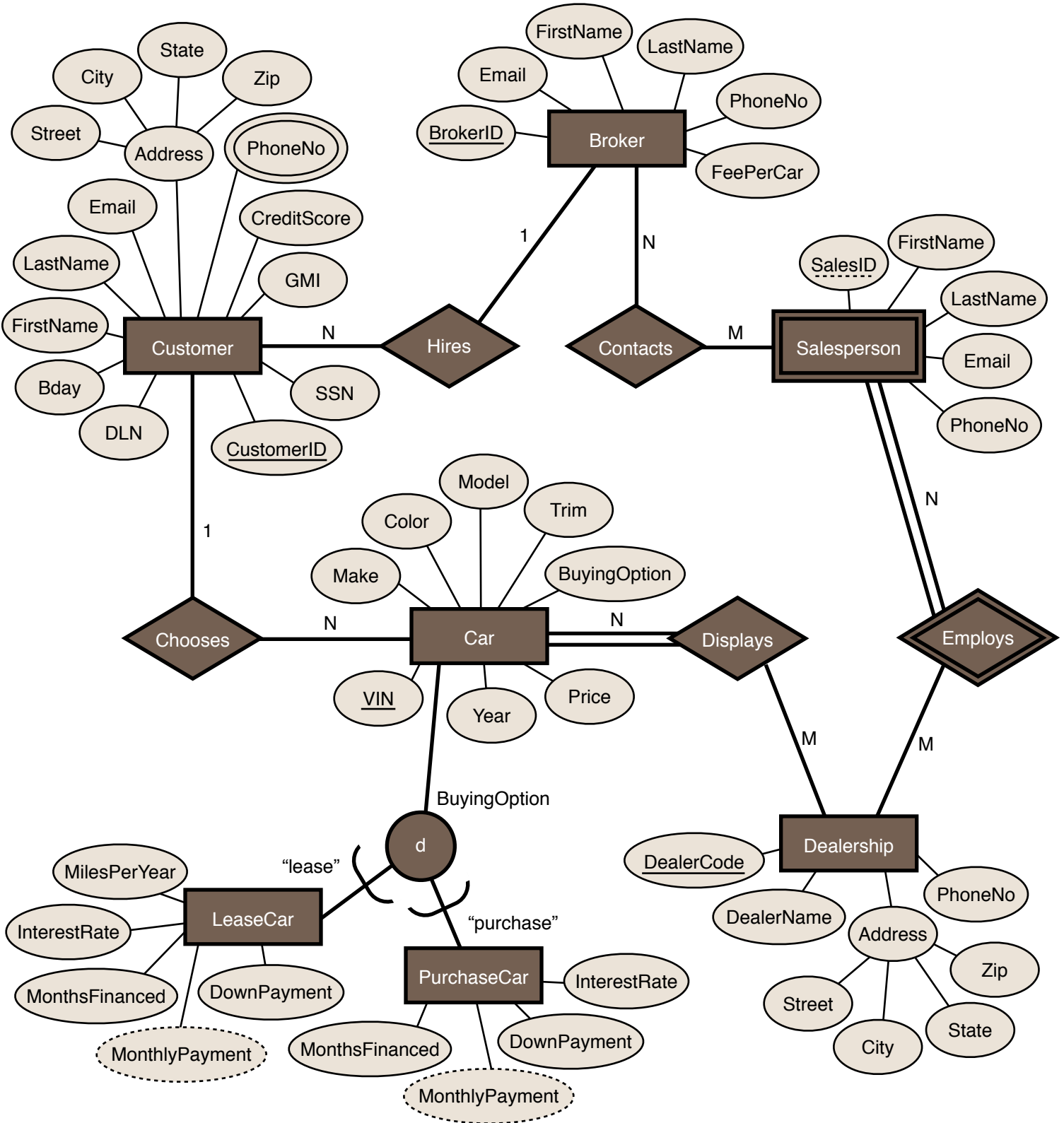
CC Auto Team brokers work with salespersons who are employed by reputable car dealerships. Each dealership that employs a salesperson who has been contacted by a broker has their dealership's name, address (street, city, state, and zip code), a phone number, and a natural key known as a Dealer Code which uniquely identifies them added into the database. Salespersons, all of whom have had a uniquely identifiable number assigned to them by the dealership they are employed by, have this ID number, their name, an email address, and a phone number entered into the database as well. The Dealer Code for the dealership that employs the salesperson is included

too. In CC Auto Team's database, salespersons are only recognized as being employed by one dealership though each dealership employs many salespersons. At any given time, multiple brokers can work with multiple salespersons and vice versa.

Any given dealership has an inventory of many cars, each of which are identifiable by their unique vehicle identification number (VIN). Along with their VINs, information about a vehicle's make, model, year, trim, color, and price are recorded as well. Only one specific car can be a part of a dealership's inventory and, thus, only one dealership can include a specific car as a part of its inventory. Car information will not be recorded in this database until the customer has chosen a specific car.

If a customer chooses a car, they will need to decide whether or not they would like to either lease it or to purchase it. This database recognizes the decision as the customer's buying option. A customer can choose to buy or lease any number of cars though a specific car can only be bought or leased by a single customer within this database. The customer's chosen car's VIN is added to their file once they've decided on their buying option. Since CC Auto Team is an elite car broker, they won't accept customers if they need a cosigner. Additional information is added to the database depending on the customer's purchasing choice. If the leasing option is chosen, information about the number of months financed, the down payment amount, the interest rate, and the miles per year are recorded before a monthly payment is calculated based on this information. If the purchase option is selected, information about the number of months financed, the down payment amount, and the interest rate are recorded before a monthly payment is calculated based on this information.

ER Model



## Relational Schema (Mapped Translation)

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**Broker**(BrokerID,FirstName,LastName,PhoneNo,Email,FeePerCar)

**Customer**(CustomerID,FirstName,LastName,AddressStreet,AddressCity,AddressState,  
AddressZip,Email,Bday,SSN,DLN,CreditScore,GMI,BrokerID)

**CustomerPhoneNo**(CustomerID,PhoneNo)

**Car**(VIN,Make,Model,Color,Year,Trim,Price,BuyingOption,CustomerID)

**LeaseCar**(VIN,MonthsFinanced,MilesPerYear,InterestRate,DownPayment)

**PurchaseCar**(VIN,MonthsFinanced,InterestRate,DownPayment)

**Dealership**(DealerCode,DealerName,PhoneNo,AddressStreet,AddressCity,  
AddressState,AddressZip)

**Salesperson**(Dealership,SalesID,FirstName,LastName,Email,PhoneNo)

**Contacts**(BrokerID,SalesID)

**Displays**(DealerCode,VIN)

## Data Dictionary

<b>Broker:</b> Contains information about the small team of automobile brokers known collectively as the CC Auto Team						
Attribute Name	Description	Datatype	Domain	N	PK	FK
BrokerID	Employee's uniquely identifiable identification number	CHAR(3)	000 – 999	N	Y	N
FirstName	Employee's first name	VARCHAR2(50)	All	N	N	N
LastName	Employee's last name	VARCHAR2(50)	All	N	N	N
PhoneNo	Employee's primary phone number	CHAR(10)	0000000000 – 9999999999	N	N	N
Email	Employee's primary work email address	VARCHAR2(50)	All	N	N	N
FeePerCar	Agreed upon fee paid by Dealership to Broker after completing a sale; fee is dependent on Dealership and Car price and is not paid by Customer	NUMBER(6,2)	0000.00 – 4000.00	N	N	N

<b>Customer:</b> Contains information about all Customers including potential customers, those in the process of buying a vehicle, and those that already have						
Attribute Name	Description	Datatype	Domain	N	PK	FK
CustomerID	Customer's uniquely identifiable identification number	CHAR(6)	000000 – 999999	N	Y	N
FirstName	Customer's first name	VARCHAR2(50)	All	N	N	N
LastName	Customer's last name	VARCHAR2(50)	All	N	N	N
AddressStreet	The street portion of a Customer's permanent address	VARCHAR2(50)	All	N	N	N
AddressCity	The city portion of a Customer's permanent address	VARCHAR2(50)	All	N	N	N
AddressState	The abbreviated state portion of a Customer's permanent address	CHAR(2)	AL – WY or DC	N	N	N
AddressZip	The five digit zip code portion of a Customer's permanent address	CHAR(5)	00000 – 99999	N	N	N
Email	Customer's primary email address	VARCHAR2(50)	All	Y	N	N

Bday	Customer's date of birth	DATE	> 1/1/1925	N	N	N
SSN	Customer's social security number	CHAR(9)	000000000 – 999999999	Y	N	N
DLN	Customer's driver's license number	VARCHAR2(18)	All	Y	N	N
CreditScore	Customer's credit score	CHAR(3)	000 – 999	N	N	N
GMI	Customer's gross monthly income	NUMBER(7,2)	00000.00 – 99999.99	N	N	N
BrokerID	Hired Broker's uniquely identifiable identification number	CHAR(3)	000 – 999	N	N	Y

<b>CustomerPhoneNo:</b> Contains information about Customer's phone number(s)						
Attribute Name	Description	Datatype	Domain	N	PK	FK
CustomerID	Customer's uniquely identifiable identification number	CHAR(6)	000000 – 099999	N	N	Y
PhoneNo	Customer's phone number(s)	CHAR(10)	000000000 – 999999999	N	N	N

<b>Car:</b> Contains information about Cars displayed on a Dealership's lot that are currently available to buy						
Attribute Name	Description	Datatype	Domain	N	PK	FK
VIN	Car's vehicle identification number	CHAR(17)	All	N	Y	N
Make	Car's brand name	VARCHAR2(25)	All	N	N	N
Model	Car's model type	VARCHAR2(25)	All	N	N	N
Color	Car's dominate color	VARCHAR2(10)	All	N	N	N
Year	Car's manufactured year	CHAR(4)	1975 – 9999	N	N	N
Trim	Car's trim type	VARCHAR2(25)	All	N	N	N
Price	Car's listing price	NUMBER(8,2)	000000.00 – 999999.99	N	N	N
BuyingOption	The way in which a Customer decides to buy the Car (Lease or Purchase)	CHAR(1)	L (for Lease) or P (for Purchase)	N	N	N
CustomerID	The Car's buying Customer's uniquely identifiable identification number	CHAR(6)	000000 – 999999	N	N	Y



<b>LeaseCar:</b> Contains information for when a Customer chooses “Lease” as their Car buying option						
Attribute Name	Description	Datatype	Domain	N	PK	FK
VIN	Car’s vehicle identification number	CHAR(17)	All	N	N	Y
MonthsFinanced	Number of months financed	NUMBER(2)	12 – 84	N	N	N
MilesPerYear	Number of miles allowed to accumulate on the Car per year	CHAR(5)	00000 – 99999	N	N	N
InterestRate	Interest rate of the Lease agreement	NUMBER(5,3)	00.000 – 99.999	N	N	N
DownPayment	Amount of money the Customer gave as a down payment	NUMBER(8,2)	000000.00 – 999999.99	N	N	N

<b>PurchaseCar:</b> Contains information for when a Customer chooses “Purchase” as their Car buying option						
Attribute Name	Description	Datatype	Domain	N	PK	FK
VIN	Car’s vehicle identification number	CHAR(17)	All	N	N	Y
MonthsFinanced	Number of months financed	NUMBER(2)	12 – 84	N	N	N
InterestRate	Interest rate of the Lease agreement	NUMBER(5,3)	00.000 – 99.999	N	N	N
DownPayment	Amount of money the Customer gave as a down payment	NUMBER(8,2)	000000.00 – 999999.99	N	N	N

<b>Dealership:</b> Contains information about the Dealership that employs Salespersons with whom Brokers work with						
Attribute Name	Description	Datatype	Domain	N	PK	FK
DealerCode	Dealership’s uniquely identifiable identification code	CHAR(6)	All	N	Y	N
DealerName	Dealership’s name	VARCHAR2(50)	All	N	N	N
PhoneNo	Dealership’s primary phone number	CHAR(10)	0000000000 – 9999999999	N	N	N
AddressStreet	The street portion of a Dealership’s address	VARCHAR2(50)	All	N	N	N
AddressCity	The city portion of a Dealership’s address	VARCHAR2(50)	All	N	N	N
AddressState	The abbreviated state portion of a Dealership’s address	CHAR(2)	AL – WY or DC	N	N	N
AddressZip	The five digit zip code portion of a Dealership’s address	CHAR(5)	00000 – 99999	N	N	N

<b>Salesperson:</b> Contains information about Salespersons employed at a Dealership						
Attribute Name	Description	Datatype	Domain	N	PK	FK
DealerCode	The uniquely identifiable identification code for the Dealership which employs the Salesperson	CHAR(6)	All	N	N	Y
SalesID	Salesperson's uniquely identifiable identification number	CHAR(4)	0000 – 9999	N	Y	N
FirstName	Salesperson's first name	VARCHAR2(50)	All	N	N	N
LastName	Salesperson's last name	VARCHAR2(50)	All	N	N	N
Email	Salesperson's primary email address	VARCHAR2(50)	All	N	N	N
PhoneNo	Salesperson's primary phone number	CHAR(10)	0000000000 – 9999999999	N	N	N

<b>Contacts:</b> Relationship between Broker and Salesperson						
Attribute Name	Description	Datatype	Domain	N	PK	FK
BrokerID	The uniquely identifiable identification number of the Broker contacted by a Customer	CHAR(3)	000 – 999	N	Y	Y
SalesID	The uniquely identifiable identification number of the Salesperson contacted by a Broker	CHAR(4)	0000 – 9999	N	Y	Y

<b>Displays:</b> Relationship between Dealership and Car						
Attribute Name	Description	Datatype	Domain	N	PK	FK
DealerCode	The uniquely identifiable identification code of the Dealership which employs the Salesperson	CHAR(6)	All	N	Y	Y
VIN	Chosen Car's vehicle identification number	CHAR(17)	All	N	Y	Y

## Data Definition Language (DDL)

---

```
CREATE TABLE Broker
(
    BrokerID CHAR(3)
        CONSTRAINT broker_pk PRIMARY KEY
        CONSTRAINT broker_ck_bid
        CHECK (BrokerID BETWEEN 000 AND 999),
    FirstName VARCHAR2(50)
        CONSTRAINT broker_nn_fname NOT NULL,
    LastName VARCHAR2(50)
        CONSTRAINT broker_nn_lname NOT NULL,
    PhoneNo CHAR(10)
        CONSTRAINT broker_nn_phoneno NOT NULL
        CONSTRAINT broker_ck_phoneno
        CHECK (PhoneNo BETWEEN 0000000000 AND 9999999999),
    Email VARCHAR2(50)
        CONSTRAINT broker_uq_email UNIQUE
        CONSTRAINT broker_nn_email NOT NULL,
    FeePerCar NUMBER(6,2)
        CONSTRAINT broker_nn_feepercar NOT NULL
        CONSTRAINT broker_ck_feepercar CHECK (FeePerCar BETWEEN 0000.00 AND 4000.00)
);
```

```
CREATE TABLE Customer
(
    CustomerID CHAR(6)
        CONSTRAINT customer_pk PRIMARY KEY
        CONSTRAINT customer_ck_cid CHECK (CustomerID BETWEEN 000000 AND 999999),
    FirstName VARCHAR2(50)
        CONSTRAINT customer_nn_fname NOT NULL,
    LastName VARCHAR2(50)
```

```
    CONSTRAINT customer_nn_lname NOT NULL,
AddressStreet VARCHAR2(50)
    CONSTRAINT customer_nn_street NOT NULL,
AddressCity VARCHAR2(50)
    CONSTRAINT customer_nn_city NOT NULL,
AddressState CHAR(2)
    CONSTRAINT customer_nn_state NOT NULL,
AddressZip CHAR(5)
    CONSTRAINT customer_nn_zip NOT NULL
    CONSTRAINT customer_ck_zip CHECK (AddressZip BETWEEN 00000 AND 99999),
Email VARCHAR2(50)
    CONSTRAINT customer_uq_email UNIQUE,
Bday DATE
    CONSTRAINT customer_nn_bday NOT NULL
    CONSTRAINT customer_ck_bday CHECK (Bday > TO_DATE('1925-01-01', 'YYYY-MM-DD')),
SSN CHAR(9)
    CONSTRAINT customer_uq_ssn UNIQUE
    CONSTRAINT customer_ck_ssn CHECK (SSN BETWEEN 000000000 AND 999999999),
DLN VARCHAR2(18)
    CONSTRAINT customer_uq_dln UNIQUE,
CreditScore CHAR(3)
    CONSTRAINT customer_nn_creditscore NOT NULL
    CONSTRAINT customer_ck_creditscore CHECK (CreditScore BETWEEN 000 AND 999),
GMI NUMBER(7,2)
    CONSTRAINT customer_nn_gmi NOT NULL
    CONSTRAINT customer_ck_gmi CHECK (GMI BETWEEN 00000.00 AND 99999.99),
BrokerID CHAR(3)
    CONSTRAINT customer_fk_brokerid REFERENCES Broker(BrokerID)
ON DELETE SET NULL
);
```

```
CREATE TABLE CustomerPhoneNo
(
    PhoneNo CHAR(10)
        CONSTRAINT customerphoneno_nn_phoneno NOT NULL
        CONSTRAINT customerphoneno_ck_phoneno CHECK (PhoneNo BETWEEN 0000000000 AND 9999999999),
    CustomerID CHAR(6)
        CONSTRAINT customerphoneno_fk_customerid REFERENCES Customer(CustomerID)
    ON DELETE CASCADE
);
```

```
CREATE TABLE Car
(
    VIN CHAR(17)
        CONSTRAINT car_pk_vin PRIMARY KEY,
    Make VARCHAR2(25)
        CONSTRAINT car_nn_make NOT NULL,
    Model VARCHAR2(25)
        CONSTRAINT car_nn_model NOT NULL,
    Color VARCHAR2(10)
        CONSTRAINT car_nn_color NOT NULL,
    Year CHAR(4)
        CONSTRAINT car_nn_year NOT NULL
        CONSTRAINT car_ck_year CHECK (Year BETWEEN 1975 AND 9999),
    Trim VARCHAR2(25)
        CONSTRAINT car_nn_trim NOT NULL,
    Price NUMBER(8,2)
        CONSTRAINT car_nn_price NOT NULL
        CONSTRAINT car_ck_price CHECK (Price BETWEEN 000000.00 AND 999999.99),
    BuyingOption CHAR(1)
        CONSTRAINT car_nn_boption NOT NULL,
        CONSTRAINT car_ck_boption CHECK (BuyingOption IN ('L','P')),
```

```
CustomerID CHAR(6)
    CONSTRAINT car_fk_customerid REFERENCES Customer(CustomerID)
ON DELETE CASCADE
);

CREATE TABLE LeaseCar
(
    VIN CHAR(17)
        CONSTRAINT lease_fk_vin REFERENCES Car(VIN) ON DELETE CASCADE,
    MonthsFinanced NUMBER(2)
        CONSTRAINT lease_nn_mf NOT NULL,
        CONSTRAINT lease_ck_mf CHECK (MonthsFinanced BETWEEN 12 and 84),
    MilesPerYear CHAR(5)
        CONSTRAINT lease_nn_mpy NOT NULL
        CONSTRAINT lease_ck_mpy CHECK (MilesPerYear BETWEEN 00000 AND 99999),
    InterestRate NUMBER(5,3) CONSTRAINT lease_nn_ir NOT NULL
        CONSTRAINT lease_ck_ir CHECK (InterestRate BETWEEN 00.000 AND 99.999),
    DownPayment NUMBER(8,2) CONSTRAINT lease_nn_dpayment NOT NULL
        CONSTRAINT lease_ck_dpayment CHECK (DownPayment BETWEEN 000000.00 AND 999999.99)
);

CREATE TABLE PurchaseCar
(
    VIN CHAR(17)
        CONSTRAINT purchase_fk_vin REFERENCES Car(VIN) ON DELETE CASCADE,
    MonthsFinanced NUMBER(2)
        CONSTRAINT purchase_nn_mf NOT NULL,
        CONSTRAINT purchase_ck_mf CHECK (MonthsFinanced BETWEEN 12 AND 84),
    InterestRate NUMBER(5,3)
        CONSTRAINT purchase_nn_ir NOT NULL
        CONSTRAINT purchase_ck_ir CHECK (InterestRate BETWEEN 00.000 AND 99.999),
    DownPayment NUMBER(8,2)
```

```
CONSTRAINT purchahse_nn_dpayment NOT NULL
CONSTRAINT purchase_ck_dpayment CHECK (DownPayment BETWEEN 000000.00 AND 999999.99)
);

CREATE TABLE Dealership
(
DealerCode CHAR(6)
CONSTRAINT dealer_pk_dcode PRIMARY KEY,
DealerName VARCHAR2(25)
CONSTRAINT dealer_nn_dname NOT NULL,
PhoneNo CHAR(10) CONSTRAINT dealer_nn_phoneno NOT NULL
CONSTRAINT dealer_ck_phoneno CHECK (PhoneNo BETWEEN 0000000000 AND 9999999999),
AddressStreet VARCHAR2(50)
CONSTRAINT dealer_nn_street NOT NULL,
AddressCity VARCHAR2(50)
CONSTRAINT dealer_nn_city NOT NULL,
AddressState CHAR(2)
CONSTRAINT dealer_nn_state NOT NULL,
AddressZip CHAR(5)
CONSTRAINT dealer_nn_zip NOT NULL
CONSTRAINT dealer_ck_zip CHECK (AddressZip BETWEEN 00000 AND 99999)
);

CREATE TABLE Salesperson
(
SalesID CHAR(4)
CONSTRAINT sales_pk_sid PRIMARY KEY
CONSTRAINT sales_ck_sid CHECK (SalesID BETWEEN 0000 AND 9999),
FirstName VARCHAR2(50)
CONSTRAINT sales_nn_fname NOT NULL,
LastName VARCHAR2(50)
CONSTRAINT sales_nn_lname NOT NULL,
```

```
Email VARCHAR2(50)
    CONSTRAINT sales_uq_email UNIQUE
    CONSTRAINT sales_nn_email NOT NULL,
PhoneNo CHAR(10)
    CONSTRAINT sales_nn_phoneno NOT NULL
    CONSTRAINT sales_ck_phoneno CHECK (PhoneNo BETWEEN 0000000000 AND 9999999999),
DealerCode CHAR(6)
    CONSTRAINT sales_fk_dealercode REFERENCES Dealership(DealerCode)
ON DELETE CASCADE
);

CREATE TABLE Contacts
(
    BrokerID CHAR(3)
        CONSTRAINT contacts_fk_brokerid REFERENCES Broker(BrokerID) ON DELETE CASCADE,
    SalesID CHAR(4)
        CONSTRAINT contacts_fk_sid REFERENCES Salesperson(SalesID) ON DELETE CASCADE,
    CONSTRAINT pk_contacts PRIMARY KEY (BrokerID, SalesID)
);

CREATE TABLE Displays
(
    DealerCode CHAR(6)
        CONSTRAINT displays_fk_dcode REFERENCES Dealership(DealerCode) ON DELETE CASCADE,
    VIN CHAR(17)
        CONSTRAINT displays_fk_vin REFERENCES Car(VIN) ON DELETE CASCADE,
    CONSTRAINT pk_displays PRIMARY KEY (DealerCode, VIN)
);
```



## Data Manipulation Language (DML)

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### Insertions

```
INSERT INTO Broker (BrokerID, FirstName, LastName, PhoneNo, Email, FeePerCar)
VALUES ('104','Michael','Lomeli','6261117890','mikelomeli@ccautoteam.biz','2500.00');
INSERT INTO Broker (BrokerID, FirstName, LastName, PhoneNo, Email, FeePerCar)
VALUES ('133','Joshua','Sacavage','6261113645','josh sacavage@ccautoteam.biz','2450.00');
INSERT INTO Broker (BrokerID, FirstName, LastName, PhoneNo, Email, FeePerCar)
VALUES ('149','Angie','Zearbaugh','6261112354','angiezearbaugh@ccautoteam.biz','2450.00');
INSERT INTO Broker (BrokerID, FirstName, LastName, PhoneNo, Email, FeePerCar)
VALUES ('186','Daniel','Hoffman','6261119867','danhoffman@ccautoteam.biz','2300.00');

INSERT INTO Customer (CustomerID, FirstName, LastName, AddressStreet,
    AddressCity, AddressState, AddressZip, Email, Bday, SSN, DLN, CreditScore,
    GMI, BrokerID)
VALUES ('223478','Lorelai','Gilmore','37 Maple Street','Stars Hollow','CT',
    '06492','lorelia@thedragonflyinn.biz',TO_DATE('1968-04-26','YYYY-MM-DD'),
    '041678691','CT686811304','860','6500','186');

INSERT INTO Customer (CustomerID, FirstName, LastName, AddressStreet,
    AddressCity, AddressState, AddressZip, Email, Bday, SSN, DLN, CreditScore,
    GMI, BrokerID)
VALUES ('382198','Meredith','Grey','15000 Centennial Drive','Seattle','WA',
    '98109','mgrey@seattlelegmwh.com',TO_DATE('1978-04-08','YYYY-MM-DD'),
    '787017823','GREYM226JH','910','31000','133');

INSERT INTO Customer (CustomerID, FirstName, LastName, AddressStreet,
    AddressCity, AddressState, AddressZip, Email, Bday, SSN, DLN, CreditScore,
    GMI, BrokerID)
VALUES ('853691','Sarah','Braverman','55 Washington Ave','Berkeley','CA',
    '94705','sarah-bear@gmail.com',TO_DATE('1972-09-13','YYYY-MM-DD'),
    '573003582','B5418865CA','660','4000','149');

INSERT INTO Customer (CustomerID, FirstName, LastName, AddressStreet,
```

```
AddressCity, AddressState, AddressZip, Email, Bday, SSN, DLN, CreditScore,
GMI, BrokerID)
VALUES ('328817', 'Ben', 'Wyatt', '885 Pawnee Circle', 'Pawnee', 'IN', '46011',
'ben_wyatt@pawnee.gov', TO_DATE('1974-11-14', 'YYYY-MM-DD'), '783148600',
'1N583730', '834', '5250', '104');
INSERT INTO Customer (CustomerID, FirstName, LastName, AddressStreet,
AddressCity, AddressState, AddressZip, Email, Bday, SSN, DLN, CreditScore,
GMI, BrokerID)
VALUES ('488700', 'Pacey', 'Witter', '87 Amsterdam Ave Apt 124', 'New York',
'NY', '10023', 'keepthepace@yahoo.com', TO_DATE('1983-01-21', 'YYYY-MM-DD'),
'022943891', 'MA035581', '850', '4200', '149');

INSERT INTO CustomerPhoneNo (PhoneNo, CustomerID)
VALUES ('8124422244', '328817');
INSERT INTO CustomerPhoneNo (PhoneNo, CustomerID)
VALUES ('8124228485', '328817');
INSERT INTO CustomerPhoneNo (PhoneNo, CustomerID)
VALUES ('2038991122', '223478');
INSERT INTO CustomerPhoneNo (PhoneNo, CustomerID)
VALUES ('4155658899', '853691');
INSERT INTO CustomerPhoneNo (PhoneNo, CustomerID)
VALUES ('7185760093', '488700');
INSERT INTO CustomerPhoneNo (PhoneNo, CustomerID)
VALUES ('2069893347', '382198');
INSERT INTO CustomerPhoneNo (PhoneNo, CustomerID)
VALUES ('2067871486', '382198');

INSERT INTO Car (VIN, Make, Model, Color, Year, Trim, Price, BuyingOption, CustomerID)
VALUES ('4F4CR16UXRTM62412', 'Lexus', 'NX', 'Black', '2017', 'Turbo', '035285.00', 'L', '382198');
INSERT INTO Car (VIN, Make, Model, Color, Year, Trim, Price, BuyingOption, CustomerID)
VALUES ('5NPET46C07H192362', 'Toyota', 'Camry', 'Blue', '2018', 'LE', '024000.00', 'P', '223478');
INSERT INTO Car (VIN, Make, Model, Color, Year, Trim, Price, BuyingOption, CustomerID)
```

```
VALUES ('3C3CFFCR7CT272159','Kia','Optima','White','2018','S','023500.00','L','328817');
INSERT INTO Car (VIN, Make, Model, Color, Year, Trim, Price, BuyingOption, CustomerID)
VALUES ('JH4DA3350HS000229','Infiniti','Q50','Gray','2018','Luxe','036550.00','P','488700');
INSERT INTO Car (VIN, Make, Model, Color, Year, Trim, Price, BuyingOption, CustomerID)
VALUES ('5FNRL38209B014050','Porsche','911','Yellow','2018','Carrera S','105100.00','L','382198');
INSERT INTO Car (VIN, Make, Model, Color, Year, Trim, Price, BuyingOption, CustomerID)
VALUES ('1FMCU14T6JU400773','Honda','Odyssey','Silver','2018','LX','029990.00','P','853691');

INSERT INTO LeaseCar (VIN, MonthsFinanced, MilesPerYear, InterestRate, DownPayment)
VALUES ('4F4CR16UXRTM62412','24','10000','01.500','02000.00');
INSERT INTO LeaseCar (VIN, MonthsFinanced, MilesPerYear, InterestRate, DownPayment)
VALUES ('3C3CFFCR7CT272159','36','15000','00.50','01500.00');
INSERT INTO LeaseCar (VIN, MonthsFinanced, MilesPerYear, InterestRate, DownPayment)
VALUES ('5FNRL38209B014050','36','12000','03.50','03500.00');

INSERT INTO PurchaseCar (VIN, MonthsFinanced, InterestRate, DownPayment)
VALUES ('5NPET46C07H192362','72','00.00','03500.00');
INSERT INTO PurchaseCar (VIN, MonthsFinanced, InterestRate, DownPayment)
VALUES ('JH4DA3350HS000229','60','03.50','10000.00');
INSERT INTO PurchaseCar (VIN, MonthsFinanced, InterestRate, DownPayment)
VALUES ('1FMCU14T6JU400773','48','01.50','07000.00');

INSERT INTO Dealership (DealerCode, DealerName, PhoneNo, AddressStreet,
    AddressCity, AddressState, AddressZip)
VALUES ('P91105','Rusnak Pasadena Porsche','8442422521','325 W Colorado Blvd',
    'Pasadena','CA','91105');
INSERT INTO Dealership (DealerCode, DealerName, PhoneNo, AddressStreet,
    AddressCity, AddressState, AddressZip)
VALUES ('LX0098','Lexus of Glendale','8185071300','1221 S Brand Blvd',
    'Glendale','CA','91204');
INSERT INTO Dealership (DealerCode, DealerName, PhoneNo, AddressStreet,
    AddressCity, AddressState, AddressZip)
```

```
VALUES ('395T0Y','Toyota Pasadena','6267959787','3600 E Foothill Blvd',
'Pasadena','CA','91107');
INSERT INTO Dealership (DealerCode, DealerName, PhoneNo, AddressStreet,
AddressCity, AddressState, AddressZip)
VALUES ('H091ND','Honda Of Pasadena','6263250016','1965 E Foothill Blvd',
'Pasadena','CA','91107');
INSERT INTO Dealership (DealerCode, DealerName, PhoneNo, AddressStreet,
AddressCity, AddressState, AddressZip)
VALUES ('K1A421','Car Pros Kia Glendale','8448467206','400 S Brand Blvd',
'Pasadena','CA','91204');
INSERT INTO Dealership (DealerCode, DealerName, PhoneNo, AddressStreet,
AddressCity, AddressState, AddressZip)
VALUES ('NF0356','Glendale Infiniti','8185435000','812 S Brand Blvd',
'Glendale','CA','91204');

INSERT INTO Salesperson (SalesID, FirstName, LastName, Email, PhoneNo, DealerCode)
VALUES ('0119','Evan','Hansen','Evan@carprosglendale.biz','8448467206','K1A421');
INSERT INTO Salesperson (SalesID, FirstName, LastName, Email, PhoneNo, DealerCode)
VALUES ('0120','Zoe','Murphy','Zoe@carprosglendale.biz','8448467206','K1A421');
INSERT INTO Salesperson (SalesID, FirstName, LastName, Email, PhoneNo, DealerCode)
VALUES ('0069','Patrick','Bateman','pat@porschepasadena.biz','8442422516','P91105');
INSERT INTO Salesperson (SalesID, FirstName, LastName, Email, PhoneNo, DealerCode)
VALUES ('0065','Moritz','Stiefel','mStiefel@hondaofpasadena.com','6263250016','H091ND');
INSERT INTO Salesperson (SalesID, FirstName, LastName, Email, PhoneNo, DealerCode)
VALUES ('9184','Melchior','Gabor','Melchior@LexusofGlendale.com','8185071300','LX0098');
INSERT INTO Salesperson (SalesID, FirstName, LastName, Email, PhoneNo, DealerCode)
VALUES ('0932','Hedwig','Robinson','hedwig@TOYOTApasadena.com','6267959787','395T0Y');
INSERT INTO Salesperson (SalesID, FirstName, LastName, Email, PhoneNo, DealerCode)
VALUES ('0015','Nora','Helmer','Nora@glendale_infiniti.com','8185435000','NF0356');

INSERT INTO Contacts (BrokerID, SalesID)
VALUES ('133','9184');
```

```
INSERT INTO Contacts (BrokerID, SalesID)
VALUES ('186','0932');
INSERT INTO Contacts (BrokerID, SalesID)
VALUES ('104','0119');
INSERT INTO Contacts (BrokerID, SalesID)
VALUES ('149','0015');
INSERT INTO Contacts (BrokerID, SalesID)
VALUES ('133','0069');
INSERT INTO Contacts (BrokerID, SalesID)
VALUES ('149','0065');

INSERT INTO Displays (DealerCode, VIN)
VALUES ('LX0098','4F4CR16UXRTM62412');
INSERT INTO Displays (DealerCode, VIN)
VALUES ('395T0Y','5NPET46C07H192362');
INSERT INTO Displays (DealerCode, VIN)
VALUES ('K1A421','3C3CFFCR7CT272159');
INSERT INTO Displays (DealerCode, VIN)
VALUES ('NF0356','JH4DA3350HS000229');
INSERT INTO Displays (DealerCode, VIN)
VALUES ('P91105','5FNRL38209B014050');
INSERT INTO Displays (DealerCode, VIN)
VALUES ('H091ND','1FMCU14T6JU400773');
```

## Data Manipulation Language (DML)

---

### Updates and Deletions

Broker Angie Zearbaugh, BrokerID 149, recently got married. The following SQL statement updates both her last name and her email address to reflect the new last name that she took.

```
UPDATE Broker
SET LastName = 'Rouse', Email = 'angierouse@ccautoteam.biz'
WHERE BrokerID = '149';
```

Broker 186, Daniel Hoffman, has decided to leave the company to pursue other opportunities. This SQL statement deletes his record from the database.

```
DELETE FROM Broker
WHERE BrokerID = '186';
```

Daniel Hoffman was Lorelai Gilmore's (CustomerID: 223478) broker. With his resignation, she's in need of a new broker to work with. She's agreed to work with Angie Rouse (BrokerID: 149), so the following SQL statement reflects this change.

```
UPDATE Customer
SET BrokerID = '149'
WHERE CustomerID = '223478';
```

Hedwig Robinson (SalesID: 0932) was in Contact with Daniel Hoffman. Since the SQL statement above was executed to reflect Mr. Hoffman's resignation, Hedwig and Daniel's database relationship was removed. This makes room for a new one to reflect Angie Rouse (BrokerID: 149) now contacting Hedwig. The statement below inserts this new relationship into the database.

```
INSERT INTO Contacts (BrokerID, SalesID)
VALUES ('149', '0932');
```

Ben Wyatt, whose CustomerID is 328817, has asked that he no longer be called on his 812-442-2244 phone number. This phone number is deleted from the database with this SQL statement.

```
DELETE FROM CustomerPhoneNo
WHERE PhoneNo = '8124422244';
```

CustomerID 488700, who is better known as Pacey Witter, recently got a new cell phone number. The following SQL statement updates his old phone number to his new one.

```
UPDATE CustomerPhoneNo
SET PhoneNo = '7186759999'
WHERE CustomerID = '488700';
```

The 2018 Infiniti Q50 (VIN: JH4DA3350HS000229) was incorrectly added into the database as being gray in color. It should be silver. Below is a SQL statement to correct the mistake.

```
UPDATE Car
SET Color = 'Silver'
WHERE VIN = 'JH4DA3350HS000229';
```

The Customer that chose to lease the car with VIN 3C3CFFCR7CT272159 decided that they would go ahead and make a larger down payment on it (\$2500 instead of \$1500) in order to qualify for a slightly lower interest rate (.45 instead of .5). The SQL statement that follows updates the database.

```
UPDATE LeaseCar
SET InterestRate = '00.45', DownPayment = '02500.00'
WHERE VIN = '3C3CFFCR7CT272159';
```

The Customer that chose to purchase the car with VIN 5NPET46C07H192362 decided that they would prefer to put down a smaller down payment (\$2000 instead of \$3500) for a higher interest rate (2.0 instead of 0). The following SQL statement implements this update while also updating the number of months financed.

```
UPDATE PurchaseCar
SET InterestRate = '2.0', DownPayment = '02000.00', MonthsFinanced = '76'
WHERE VIN = '5NPET46C07H192362';
```

Instead of entering the sales phone number (844-242-2516) for the Rusnak Pasadena Porsche Dealership (DealerCode: P91105), the parts department phone number (844-242-2521) was entered. They're not happy about all the calls, so the phone number will be updated in the database with the following SQL statement.

```
UPDATE Dealership
SET PhoneNo = '8442422516'
WHERE DealerCode = 'P91105';
```

15 days ago, Nora Helmer (SalesID: 0015) walked out the front door of Glendale Infiniti and, apparently, has not be seen or heard from since. CC Auto Team will eventually need to find a new Salesperson that is Employed at this Dealership, but, in the meantime, the following SQL statement removes Nora from their database.

```
DELETE FROM Salesperson
WHERE SalesID = '0015';
```



Patrick Bateman (SalesID: 0069) was recently promoted to Vice President of Leasing Operations. This promotion prompted him to request that his email address be changed to something more formal and that he be given a direct phone line. Below is the SQL statement to make these changes though getting new business cards printed is on him.

```
UPDATE Salesperson
SET Email = 'MrBateman@PorschePasadena.biz', PhoneNo = '8442422599'
WHERE SalesID = '0069';
```

Following his promotion, Patrick Bateman (SalesID: 0069) and Joshua Sacavage (BrokerID: 133) had a huge falling out. It was so bad that Mr. Sacavage refuses to work with Mr. Bateman any longer. Michael Lomeli (BrokerID: 104) has agreed to be in contact with Mr. Bateman from this point forward. The SQL statement below updates this in the database.

```
UPDATE Contacts
SET BrokerID = '104'
WHERE SalesID = '0069';
```

The lot at Honda of Pasadena (DealerCode: H09IND) is currently overcrowded. Since Toyota Pasadena (DealerCode: 395T0Y) is so close in proximity, the car with VIN 1FMCU14T6JU400773 is temporarily on Display there. To keep an eye on the car's physical location, the following SQL statement updates the database to reflect this.

```
UPDATE Displays
SET DealerCode = '395T0Y'
WHERE VIN = '1FMCU14T6JU400773';
```

## Queries

---

From time-to-time, the CC Auto Team likes to create a master contact list of all of its Customers. Such a list contains a Customer's name (first and last), their email address, and all phone numbers they have on file. The SQL statement below creates such a list and presents it in alphabetical order based on last name.

```
SELECT c.LastName, c.FirstName, c.Email, p.PhoneNo
FROM Customer c, CustomerPhoneNo p
WHERE c.CustomerID = p.CustomerID
ORDER BY LastName;
```

```
=====
LASTNAME      FIRSTNAME     EMAIL                                PHONENO
-----
Braverman     Sarah         sarah-bear@gmail.com                4155658899
Gilmore       Lorelai      lorelia@thedragonflyinn.biz         2038991122
Grey          Meredith     mgrey@seattlegmwh.com               2069893347
Grey          Meredith     mgrey@seattlegmwh.com               2067871486
Witter        Pacey        keepthepace@yahoo.com               7186759999
Wyatt         Ben          ben_wyatt@pawnee.gov                 8124228485
=====
```

A report listing the buying options Customers chose for each car bought through the brokers at CC Auto Team was needed. The SQL statement below lists info about each car sorted by whether they were purchased, indicated with a "P," or leased, indicated with an "L." Additional SQL statements create reports counting the number of purchased cars and the number of leased cars, respectfully.

```
SELECT BuyingOption, VIN, Year, Color, Make, Model, Trim
FROM Car
ORDER by BuyingOption;
```

```
SELECT Count(*) AS "# OF LEASED CARS"
FROM Car
WHERE BuyingOption = 'L';
```

```
SELECT Count(*) AS "# of PURCHASED CARS"
FROM Car
WHERE BuyingOption = 'P';
```

```
=====
B VIN                YEAR COLOR    MAKE           MODEL          TRIM
-----
L 4F4CR16UXRTM62412 2017 Black    Lexus          NX              Turbo
L 3C3CFFCR7CT272159 2018 White   Kia            Optima          S
L 5FNRL38209B014050 2018 Yellow  Porsche        911             Carrera S
P 5NPET46C07H192362 2018 Blue    Toyota         Camry           LE
P JH4DA3350HS000229 2018 Silver  Infiniti       Q50             Luxe
P 1FMCU14T6JU400773 2018 Silver  Honda          Odyssey         LX
```

```
# OF LEASED CARS
```

```
-----
3
```

```
# of PURCHASED CARS
```

```
-----
3
=====
```

As CC Auto Team continues to grow, more Brokers continue joining the team, each of whom have their own FeePerCars. This SQL statement keeps track of the max, minimum, and average (rounded to the nearest whole number for clarity) FeePerCar across all Brokers. For quick reference, a second SQL statement creates a report that lists all Brokers, including their BrokerID and last name, organized by their FeePerCar.

```
SELECT ROUND(AVG(FeePerCar) ,0) AS "AVG FEEPERCAR",
       MIN(FeePerCar) AS "MIN FEEPERCAR", MAX(FeePerCar) AS "MAX FEEPERCAR"
FROM Broker;
```

```
SELECT FeePerCar, BrokerID, LastName
FROM Broker
ORDER by FeePerCar;
```

```
=====
AVG FEEPERCAR MIN FEEPERCAR MAX FEEPERCAR
-----
```

```
          2467          2450          2500
```

```
FEEPERCAR BRO LASTNAME
-----
```

```
    2450 133 Sacavage
```

```
    2450 149 Rouse
```

```
    2500 104 Lomeli
=====
```

The following SQL statement creates a report that lists details about all of the Cars Customers have bought through CC Auto Team's team of Brokers. The list is organized alphabetically by Customer's last name.

```
SELECT a.CustomerID, k. LastName, k. FirstName, a. Year, a. Make, a. Model, a. VIN
FROM Car a, Customer k
WHERE a.CustomerID = k.CustomerID
ORDER BY k.LastName;
```

```
=====
CUSTOM LASTNAME      FIRSTNAME      YEAR MAKE      MODEL      VIN
-----
853691 Braverman     Sarah          2018 Honda    Odyssey    1FMCU14T6JU400773
223478 Gilmore       Lorelai       2018 Toyota    Camry      5NPET46C07H192362
=====
```

382198	Grey	Meredith	2017	Lexus	NX	4F4CR16UXRTM62412
382198	Grey	Meredith	2018	Porsche	911	5FNRL38209B014050
488700	Witter	Pacey	2018	Infiniti	Q50	JH4DA3350HS000229
328817	Wyatt	Ben	2018	Kia	Optima	3C3CFFCR7CT272159

=====  
 To create two separate reports for the current monthly payments LeaseCar Customers and PurchaseCar Customers are expected to be paying, the following SQL statements were written. Report listing are alphabetize by last name and each calculated monthly payment is rounded to the nearest cent.

```
SELECT cu.CustomerID, cu.LastName, cu.FirstName, ROUND((((ca.Price-pc.DownPayment)*
    (pc.InterestRate/100))+ (ca.Price-pc.DownPayment))/pc.MonthsFinanced), 2)
    AS MonthlyPayment_Purchased
FROM Car ca, PurchaseCar pc, Customer cu
WHERE cu.CustomerID = ca.CustomerID AND ca.VIN = pc.VIN AND BuyingOption = 'P'
ORDER BY cu.LastName;
```

```
SELECT cu.CustomerID, cu.LastName, cu.FirstName, ROUND((((ca.Price-lc.DownPayment)*
    (lc.InterestRate/100))+ (ca.Price-lc.DownPayment))/lc.MonthsFinanced)/4), 2)
    AS MonthlyPayment_Leased
FROM Car ca, LeaseCar lc, Customer cu
WHERE cu.CustomerID = ca.CustomerID AND ca.VIN = lc.VIN AND BuyingOption = 'L'
ORDER BY cu.LastName;
```

=====  
 CUSTOM LASTNAME                      FIRSTNAME                      MONTHLYPAYMENT\_PURCHASED  
 -----  
 853691 Braverman                      Sarah                              486.14  
 223478 Gilmore                        Lorelai                            295.26  
 488700 Witter                          Pacey                              457.99

CUSTOM LASTNAME                      FIRSTNAME                      MONTHLYPAYMENT\_LEASED  
 -----

382198 Grey	Meredith	351.92
382198 Grey	Meredith	730.25
328817 Wyatt	Ben	146.49

=====

A report containing all Salespersons contacted by CC Auto Team Brokers was requested. The SQL statement below creates a report that lists Brokers (with their last name and BrokerID) and the Salesperson(s) (with their last name, SalesID, the name of the Dealership that employs them, and the Dealership's DealerCode) that they contacted. The list is alphabetized by the last names of the Brokers.

```
SELECT a.BrokerID, a.LastName AS "BROKER'S LAST NAME", d.SalesID, f.LastName
    AS "SALESPERSON'S LAST NAME", f.DealerCode, h.DealerName AS "DEALERSHIP'S NAME"
FROM Broker a, Contacts d, Salesperson f, Dealership h
WHERE a.BrokerID = d.BrokerID
    AND d.SalesID = f.SalesID
    AND f.DealerCode = h.DealerCode
ORDER BY a.LastName;
```

=====

BROKER'S BRO LAST NAME	SALESPERSON'S SALE LAST NAME	DEALER DEALERSHIP'S NAME
104 Lomeli	0119 Hansen	K1A421 Car Pros Kia Glendale
104 Lomeli	0069 Bateman	P91105 Rusnak Pasadena Porsche
149 Rouse	0065 Stiefel	H091ND Honda Of Pasadena
149 Rouse	0932 Robinson	395T0Y Toyota Pasadena
133 Sacavage	9184 Gabor	LX0098 Lexus of Glendale

=====

## ***Certification Statement***

---

We certify that:

- This paper/project/exam is entirely our own work.
- We have not quoted the words of any other person from a printed source or a website without indicating what has been quoted and providing an appropriate citation.
- We have not submitted this paper / project to satisfy the requirements of any other course.

*Signature*    Ian Sheddan and David Zearbaugh

*Date*         September 2, 2017