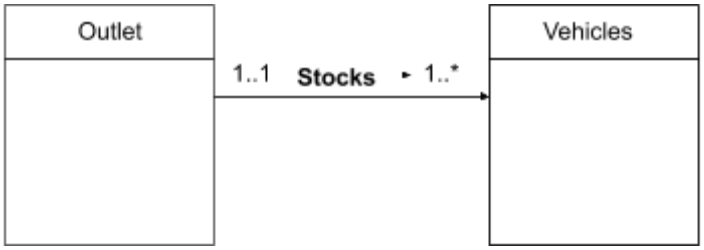
Nyanti Eason
Professor Aguiar-Pulido
CSC423:Database Systems
Due: December 3, 2020

Final Project: Case 3 *Reliable Rentals*

Part 1:

a. **Entities:** Client (strong), Vehicle (strong), Outlet (strong), Staff (strong), HireAgreement (strong)

b. **Relationships:** Outlet **Stocks** Vehicle **(one-to-many)**



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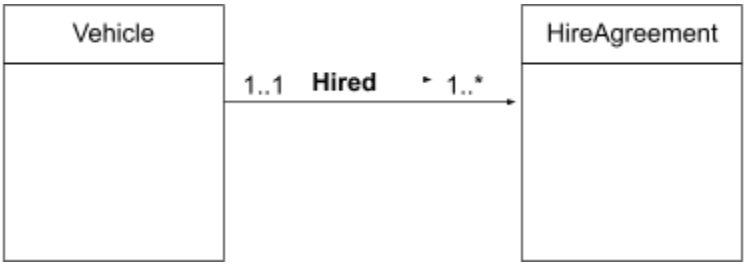
Vehicle **Hired** HireAgreements **(one-to-many)**



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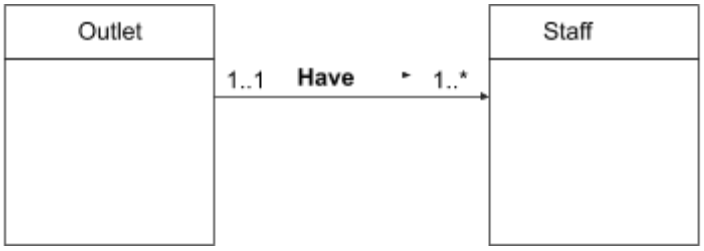
Outlet **Have** Staff **(one-to-many)**



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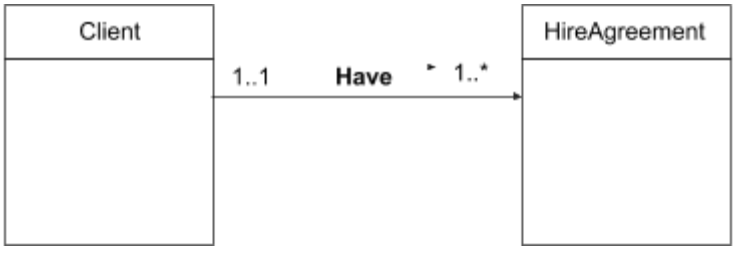
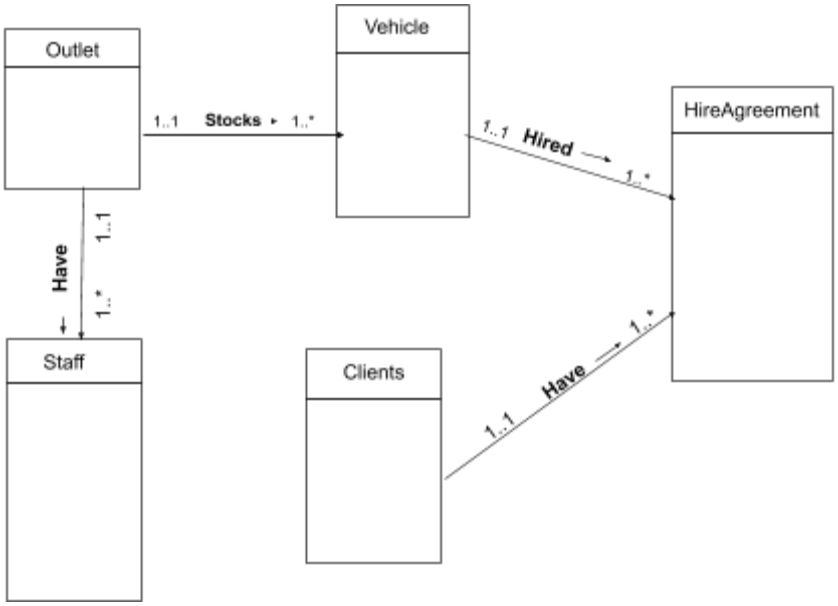
Client **Have** HireAgreement **(one-to-many)**





c. **Attributes:**

i. **Outlet**: **outletNo**, address, phoneNum and faxNum;

ii. **Client**: **clientNo**, firstName, lastName, homeAddress, phoneNum, DOB, and licenseNo;

iii. **Vehicle**: **registrationNo**, model, make, engineSize, capacity, curMileage, dailyHireRate, and outletNo;

iv. **Staff**: **staffNo**, firstName, lastName, homeAddress, homePhoneNum, DOB, sex, dateJoined, jobTitle, outletNo, and salary

v. **HireAgreement**: **hireNo**, clientNo, name, address, phoneNum, hireStartDate, hireEndDate, registrationNo, model, make, mileageBefore, mileageAfter

* Primary Key denoted by bolding and underline & Candidate Key will be underlined *

Part 2:

a.

i. Strong Entity types

Outlet: outletNo, address, phoneNum and faxNum;
Primary Key outletNo

Client: clientNo, firstName, lastName, homeAddress, phoneNum, DOB, and licenseNo;
Primary Key clientNo

Vehicle: registrationNo, model, make, engineSize, capacity, curMileage, dailyHireRate, and outletNo;
Primary Key registrationNo

Staff: staffNo, firstName, lastName, homeAddress, homePhoneNum, DOB, sex, dateJoined, jobTitle, outletNo, and salary
Primary Key staffNo

HireAgreement: hireNo, clientNo, name, address, phoneNum, hireStartDate, hireEndDate, registrationNo, model, make, mileageBefore, mileageAfter
Primary Key hireNo

ii. Weak Entity types

None Applicable

iii. One-to-many relationships

Outlets is the parent relation to Vehicles because Vehicles contain Outlets' primary key outletNo as a foreign key..

Vehicle: registrationNo, model, make, engineSize, capacity, curMileage, dailyHireRate, and outletNo;
Primary Key registrationNo
Foreign Key outletNo **references** Outlet (outletNo)

Outlets is the parent relation to Staff because Staff contains Outlets' primary key outletNo as a foreign key

Staff: staffNo, firstName, lastName, homeAddress, homePhoneNum, DOB, sex, dateJoined, jobTitle, outletNo, and salary
Primary Key staffNo
Foreign Key outletNo **references** Outlet (outletNo)

Vehicles and Client are the parent relations to HireAgreement because HireAgreement contains Vehicles' primary key registrationNo as a foreign key and Client's primary key clientNo.

HireAgreement: hireNo, clientNo, name, address, phoneNum, hireStartDate, hireEndDate, registrationNo, model, make, mileageBefore, mileageAfter
Primary Key hireNo
Foreign Key clientNo **references** Client (clientNo)
Foreign Key registrationNo **references** Vehicle (registrationNo)

iv. Final Derivation of relations

Outlet: outletNo, address, phoneNum and faxNum;
Primary Key outletNo

Client: clientNo, firstName, lastName, homeAddress, phoneNum, DOB, and licenseNo;
Primary Key clientNo

Vehicle: registrationNo, model, make, engineSize, capacity, curMileage, dailyHireRate, and outletNo;
Primary Key registrationNo
Foreign Key outletNo **references** Outlet (outletNo)

Staff: staffNo, firstName, lastName, homeAddress, homePhoneNum, DOB, sex, dateJoined, jobTitle, outletNo, and salary
Primary Key staffNo
Foreign Key outletNo **references** Outlet (outletNo)

HireAgreement: hireNo, clientNo, name, address, phoneNum, hireStartDate, hireEndDate, registrationNo, model, make, mileageBefore, mileageAfter
Primary Key hireNo
Foreign Key clientNo **references** Client (clientNo)
Foreign Key registrationNo **references** Vehicle (registrationNo)

b.

1NF: A relation in which the intersection of each row and column contains one and only one value.
2NF: A relation that is in first normal form and every non-primary-key attribute is fully functionally dependent on the primary key.
3NF: A relation that is in first and second normal form and in which no non-primary-key attribute is transitively dependent on the primary key.

Outlet:
UNF: **Outlet**(**outletNo**, address, phoneNum, faxNum)
1NF: There are no repeating groups/values present in the table. The table is flattened.
Functional dependencies:
outletNo --> address, phoneNum, faxNum
2NF: Every attribute is fully functionally dependent on the primary key.
3NF: No attributes are transitively dependent on the primary key.

Client:
UNF: **Client**(**clientNo**, firstName, lastName, homeAddress, phoneNum, DOB, licenseNo)
1NF: There are no repeating groups/values present in the table. The table is flattened.
Functional dependencies:
clientNo --> firstName, lastName, homeAddress, phoneNum, DOB, LicenseNo
2NF: Every attribute is fully functionally dependent on the primary key.
3NF: No attributes are transitively dependent on the primary key.

Vehicle:
UNF: **Vehicle**(**registrationNo**, model, make, engineSize, capacity, curMileage)
1NF: There are no repeating groups/values present in the table. The table is flattened.
Functional dependencies:
registrationNo --> model, make, engineSize, capacity, curMileage
2NF: Every attribute is fully functionally dependent on the primary key.
3NF: No attributes are transitively dependent on the primary key.

Staff:
UNF: **Staff**(**staffNo**, firstName, lastName, homeAddress, homePhoneNum, DOB, sex, dateJoined, jobTitle, outletNo, salary)
1NF: There are no repeating groups/values present in the table. The table is flattened.
Functional dependencies:
staffNo --> firstName, lastName, homeAddress, homePhoneNum, DOB, sex, dateJoined, jobTitle, outletNo, salary)
2NF: Every attribute is fully functionally dependent on the primary key.
3NF: No attributes are transitively dependent on the primary key.

HireAgreement:
UNF: **HireAgreement**(**hireNo, clientNo,** name, address, phoneNum, hireStartDate, hireEndDate, registrationNo, model, make, mileageBefore, mileageAfter)
1NF: There are no repeating groups/values present in the table. The table is flattened.
Functional dependencies:
hireNo --> hireStartDate, clientNo,registrationNo, hireEndDate, name, address, phoneNum fully, model, make, mileageBefore, mileageAfter
2NF: Every attribute is fully functionally dependent on the primary key; This is because this entity is weak.
3NF: No attributes are transitively dependent on the primary key.

c.

In the case where a potential client wants to rent a vehicle from May 10 to May 30 these are the transactions:

1. We must first make sure the client's information is entered into client table the database: **clientNo** (0234 - generated by the database), firstName (Melissa), lastName (Hoffman), homeAddress (1500 Mapleton Rd, NC), phoneNum (9178120112), DOB (09-25-1987), and licenseNo (827391201)
2. Then we process the hireArrangement table to rent the vehicle: **hireNo** (9283 - generated by the database)**, clientNo** (0234 - taken from the client)**,** name (Melissa Hoffman), address (1500 Mapleton Rd, NC), phoneNum (9178120112),mileageBefore (19,829), mileageAfter(20,000), hireStartDate (05-10-2020), hireEndDate (05-30-2020), registrationNo (KA01AD8xx2 - taken from vehicle profile), model (330i), make (BMW)

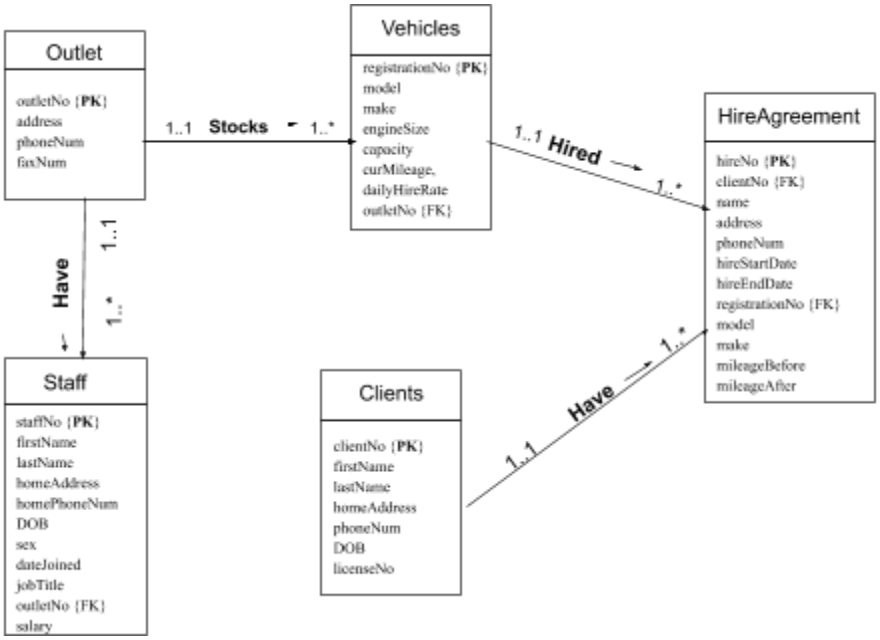
d.

i. **Primary key constraints**: Primary keys are a unique value to identify tuples within the database. Primary keys for each entity cannot be null. Every table/entity has a primary key, even weak entities. In the weak entities however the primary key is actually the foreign keys from the parent table. This is visible in the HireAgreement entity table

ii. **Referential integrity/Foreign key constraints**: If a foreign key contains a value, that value must refer to an existing tuple in the parent relation. This allows for the connection between tables. An example of foreign key constraints are visible in the Outlet and Staff relationship, Outlet and Vehicle, Client and HireAgreement, and Vehicle and HireAgreement.

iii. **Alternate key constraints** (if any). An alternate key is the key that has not been selected to be the primary key, but are candidate keys. This can be seen in the Client table with licenseNo or phoneNum; Outlet table with faxNum or phoneNum; Staff table with phoneNum.

iv. **General constraint**s (if any). Constraints enforce limits to the data or type of data that can be manipulated from a table. The whole purpose of constraints is to maintain the data integrity. Some constraints needed are hireAgreemenrs must start and end in the future, not in the past. The end date must be greater than the start date. All fields/columns must not be left empty, so there should be a NOT NULL constraint.



Part 3:

a/b.

```
CREATE TABLE Outlets(
        outletNo INT NOT NULL PRIMARY KEY,
        address VARCHAR(50) NOT NULL,
        phoneNum INT NOT NULL,
        faxNum INT NOT NULL
);

INSERT INTO Outlets VALUES (1, '4908 Scarlet Oak Wlak, GA 30128', 4044081399,
94044081399);

INSERT INTO Outlets VALUES (2, '2600 Netherland Ave, NY 10463', 9173514421,
99173514421);

INSERT INTO Outlets VALUES (3, '3880 Bird Road, FL 33146', 3058642912,
93058642912);

INSERT INTO Outlets VALUES (4, '65 West 96th Street, NY ', 2128647115,
92128647115);

INSERT INTO Outlets VALUES (5, '1451 Woodmont Lane NW, GA 30344',
6787040464, 96787040464);
```

	OUTLETNO	ADDRESS	PHONENUM	FAXNUM
1	1	4908 Scarlet Oak Wlak, GA 30128	4044081399	94044081399
2	2	2600 Netherland Ave, NY 10463	9173514421	99173514421
3	3	3880 Bird Road, FL 33146	3058642912	93058642912
4	4	65 West 96th Street, NY	2128647115	92128647115
5	5	1451 Woodmont Lane NW, GA 30344	6787040464	96787040464

```
CREATE TABLE Clients(
        clientNo INT NOT NULL PRIMARY KEY,
        firstName VARCHAR(30) NOT NULL,
        lastName VARCHAR(30) NOT NULL,
        homeAddress VARCHAR(50) NOT NULL,
        phoneNum INT NOT NULL,
        dob DATE,
        licenseNo INT NOT NULL
);

INSERT INTO Clients(clientNo, firstName, lastName, homeAddress, phoneNum, DOB,
licenseNo)
VALUES(1, 'Astarte', 'Morgan', '2299  Bungalow Road, Omaha, NE 68137',
3476152933, date '1963-04-17', 555777999);

INSERT INTO Clients(clientNo, firstName, lastName, homeAddress, phoneNum, DOB,
licenseNo)
VALUES(2, 'Princess', 'Myers', '4875  Kincheloe Road, Westport, OR, 97016',
7392773823, date '1970-03-21', 222333000);

INSERT INTO Clients(clientNo, firstName, lastName, homeAddress, phoneNum, DOB,
licenseNo)
VALUES(3, 'Kim', 'Porter', '4511 Pike Street, San Diego, CA 92101', 3052127866, date
'1992-12-25', 777222999);

INSERT INTO Clients(clientNo, firstName, lastName, homeAddress, phoneNum, DOB,
licenseNo)
VALUES(4, 'Jeff', 'Dixon', '3812 Cooks Mine Road, Naschitti, NM 86515', 3052127866,
date '1976-12-08', 666555222);

INSERT INTO Clients(clientNo, firstName, lastName, homeAddress, phoneNum, DOB,
licenseNo)
```

VALUES(5, 'Jordan', 'Tucker', '1443 Rhapsody Street, Gainesville, FL 32601',
8293872334, date '1995-02-17', 999444222);

	CLIENTNO	FIRSTNAME	LASTNAME	HOMEADDRESS	PHONENUM	DOB	LICENSENO
1	1	Astarte	Morgan	2299 Bungalow Road, Omaha, NE 68137	3476152933	17-APR-63	555777999
2	2	Princess	Myers	4875 Kincheloe Road, Westport, OR, 97016	7392773823	21-MAR-70	222333000
3	3	Kim	Porter	4511 Pike Street, San Diego, CA 92101	3052127866	25-DEC-92	777222999
4	4	Jeff	Dixon	3812 Cooks Mine Road, Naschitti, NM 86515	3052127866	08-DEC-76	666555222
5	5	Jordan	Tucker	1443 Rhapsody Street, Gainesville, FL 32601	8293872334	17-FEB-95	999444222

```
CREATE TABLE Staff(
   staffNo INT NOT NULL PRIMARY KEY,
   outletNo INT NOT NULL,
   firstName VARCHAR(30) NOT NULL,
   lastName VARCHAR(30) NOT NULL,
   homeAddress VARCHAR(50) NOT NULL,
   homePhoneNum INT NOT NULL,
   dob DATE NOT NULL,
   sex VARCHAR(1) NOT NULL CHECK(sex IN ('M', 'F')),
   dateJoined DATE NOT NULL,
   jobTitle VARCHAR(50),
   salary INT NOT NULL,
   FOREIGN KEY (outletNo) REFERENCES Outlets(outletNo) ON DELETE
CASCADE
);

ALTER TABLE Staff
add CONSTRAINT dateJoined
CHECK (dateJoined < TO_DATE('2020-12-04', 'YYYY-MM-DD'));
```

INSERT INTO Staff(staffNo, outletNo, firstName, lastName, homeAddress, homePhoneNum, DOB, sex, dateJoined, jobTitle, salary)
VALUES(1,1, 'Melissa', 'Hoffman', '2478 Irving Place, Saint Charles, MO 63304', 4959393223, date '1997-05-02', 'F', date '2020-01-04', 'Manager',100000);

INSERT INTO Staff(staffNo, outletNo, firstName, lastName, homeAddress, homePhoneNum, DOB, sex, dateJoined, jobTitle, salary)
VALUES(2,3,'Katherine', 'Hodnett', '65 West 96th Street, NY', 8393582034, date '1995-10-28', 'F', date '2020-03-04', 'Sales', 30000);

INSERT INTO Staff(staffNo, outletNo, firstName, lastName, homeAddress, homePhoneNum, DOB, sex, dateJoined, jobTitle, salary)

VALUES(3,2, 'Greg', 'Ross', '1443 Rhapsody Street, Gainesville, FL 32601', 9452034203, date '2000-02-24', 'M', date '2020-04-04', 'Manager', 200000);

INSERT INTO Staff(staffNo, outletNo, firstName, lastName, homeAddress, homePhoneNum, DOB, sex, dateJoined, jobTitle, salary)
VALUES(4, 2,'Rafael', 'Muñoz', '4400 NW 24th St, Miami, FL, 33132', 5933022045, date '1987-04-17', 'M', date '2020-05-04', 'Manager', 300000);

INSERT INTO Staff(staffNo, outletNo, firstName, lastName, homeAddress, homePhoneNum, DOB, sex, dateJoined, jobTitle, salary)
VALUES(5, 5,'Kieran', 'Downey', '4511 Pike Street, San Diego, CA 92101', 2059834856, date '1967-05-15', 'F', date '2020-06-04', 'Manager', 150000);

	STAFFNO	OUTLETNO	FIRSTNAME	LASTN...	HOMEADDRESS	HOMEP...	DOB	SEX	DATEJ...	JOBTITLE	SALARY
1	1	1	Melissa	Hoffman	2478 Irving Place, Saint Charles, MO ...	4959393223	02-MAY-97	F	04-JAN-20	Manager	100000
2	3	2	Greg	Ross	1443 Rhapsody Street, Gainesville, FL...	9452034203	24-FEB-00	M	04-APR-20	Manager	200000
3	4	2	Rafael	Muñoz	4400 NW 24th St, Miami, FL, 33132	5933022045	17-APR-87	M	04-MAY-20	Manager	300000
4	5	5	Kieran	Downey	4511 Pike Street, San Diego, CA 92101	2059834856	15-MAY-67	F	04-JUN-20	Manager	150000
5	2	3	Katherine	Hodnett	65 West 96th Street, NY	8393582034	28-OCT-95	F	04-MAR-20	Sales	30000

```
CREATE TABLE Vehicle(
   registrationNo INT NOT NULL PRIMARY KEY,
        model VARCHAR(15) NOT NULL,
        make VARCHAR(15) NOT NULL,
        engineSize INT NOT NULL,
        capacity INT NOT NULL,
        curMileage INT NOT NULL,
        dailyHireRate INT NOT NULL,
   outletNo INT NOT NULL,
        FOREIGN KEY (outletNo) REFERENCES Outlets(outletNo) ON DELETE
CASCADE
);

INSERT INTO Vehicle(registrationNo, model, make, engineSize, capacity, curMileage,
dailyHireRate, outletNo)
VALUES(555333111, '330i', 'BMW', 10, 4, 20000, 17000, 4);

INSERT INTO Vehicle(registrationNo, model, make, engineSize, capacity, curMileage,
dailyHireRate, outletNo)
VALUES(444222333, 'RangeRover', 'LandRover', 20, 5, 14000, 100, 2);

INSERT INTO Vehicle(registrationNo, model, make, engineSize, capacity, curMileage,
dailyHireRate, outletNo)
VALUES(99988222, 'TLX', 'Acura', 10, 4, 30000, 150, 1);
```

```
INSERT INTO Vehicle(registrationNo, model, make, engineSize, capacity, curMileage,
dailyHireRate, outletNo)
VALUES(55588333, 'Telluride', 'Kia', 15, 8, 22000, 175, 3);

INSERT INTO Vehicle(registrationNo, model, make, engineSize, capacity, curMileage,
dailyHireRate, outletNo)
VALUES(666777000, 'Civic', 'Honda', 5, 3.5, 28000, 100, 5);
```

	REGISTRATIONNO	MODEL	MAKE	ENGINESIZE	CAPACITY	CURMILEAGE	DAILYHIRERATE	OUTLETNO
1	555333111	330i	BMW	10	4	20000	17000	4
2	444222333	RangeRover	LandRover	20	5	14000	100	2
3	99988222	TLX	Acura	10	4	30000	150	1
4	55588333	Telluride	Kia	15	8	22000	175	3
5	666777000	Civic	Honda	5	4	28000	100	5

```
CREATE TABLE HireAgreement(
   hireNo INT NOT NULL,
   clientNo INT,
   registrationNo INT,
   firstName VARCHAR(30) NOT NULL,
   lastName VARCHAR(30) NOT NULL,
   homeAddress VARCHAR(50) NOT NULL,
   phoneNum INT NOT NULL,
   mileageBefore INT NOT NULL,
   hireStartDate DATE NOT NULL,
   mileageAfter INT NOT NULL,
   hireEndDate DATE NOT NULL,
   model VARCHAR(15) NOT NULL,
   make VARCHAR(15) NOT NULL,
   PRIMARY KEY(hireNo, clientNo,registrationNo),
   FOREIGN KEY (clientNo) REFERENCES Clients(clientNo) ON DELETE CASCADE,
   FOREIGN KEY (registrationNo) REFERENCES Vehicle(registrationNo) ON DELETE
CASCADE
);

INSERT INTO HireAgreement(hireNo, clientNo, registrationNo, firstName, lastName,
homeAddress, phoneNum, mileageBefore, hireStartDate,mileageAfter,hireEndDate,model,make)
VALUES(10, 1, 555333111, 'Astarte','Morgan','2299  Bungalow Road, Omaha, NE 68137',
3476152933,20000,date '2020-06-04',28000,date '2020-06-14','330i','BMW');
```

INSERT INTO HireAgreement(hireNo, clientNo, registrationNo, firstName, lastName, homeAddress, phoneNum, mileageBefore, hireStartDate,mileageAfter,hireEndDate,model,make) VALUES(20, 2, 666777000, 'Princess', 'Myers', '4875 Kincheloe Road, Westport, OR, 97016', 7392773823,28000,date '2021-02-14',35000,date '2021-04-17','Civic', 'Honda');

INSERT INTO HireAgreement(hireNo, clientNo, registrationNo, firstName, lastName, homeAddress, phoneNum, mileageBefore, hireStartDate,mileageAfter,hireEndDate,model,make) VALUES(30, 4, 55588333, 'Jeff', 'Dixon', '3812 Cooks Mine Road, Naschitti, NM 86515', 3052127866,22000,date '2020-07-04',28000,date '2020-08-14','Telluride','Kia');

INSERT INTO HireAgreement(hireNo, clientNo, registrationNo, firstName, lastName, homeAddress, phoneNum, mileageBefore, hireStartDate,mileageAfter,hireEndDate,model,make) VALUES(40, 5, 444222333, 'Jordan', 'Tucker', '1443 Rhapsody Street, Gainesville, FL 32601', 8293872334,14000,date '2020-12-31',17000,date '2021-03-21','RangeRover','LandRover');

INSERT INTO HireAgreement(hireNo, clientNo, registrationNo, firstName, lastName, homeAddress, phoneNum, mileageBefore, hireStartDate,mileageAfter,hireEndDate,model,make) VALUES(50, 3, 99988222, 'Kim', 'Porter', '4511 Pike Street, San Diego, CA 92101', 3052127866,30000,date '2020-11-24',36000,date '2020-12-24','TLX','Acura');

	CLIENTNO	REGISTRATIONNO	FIRSTNAME	LASTNAME	HOMEADDRESS	PHONENUM	MILEAGEBEFORE	HIRESTARTDATE	MILEAGEAFTER	HIREENDDATE	MO
1	1	555333111	Astarte	Morgan	2299 Bungalow Road, Omaha, NE 68137	3476152933	20000	04-JUN-20	28000	14-JUN-20	330i
2	2	666777000	Princess	Myers	4875 Kincheloe Road, Westport, OR, 97016	7392773823	28000	14-FEB-21	35000	17-APR-21	Civic
3	4	55588333	Jeff	Dixon	3812 Cooks Mine Road, Naschitti, NM 86515	3052127866	22000	04-JUL-20	28000	14-AUG-20	Tellu
4	5	444222333	Jordan	Tucker	1443 Rhapsody Street, Gainesville, FL 32601	8293872334	14000	31-DEC-20	17000	21-MAR-21	Range
5	3	99988222	Kim	Porter	4511 Pike Street, San Diego, CA 92101	3052127866	30000	24-NOV-20	36000	24-DEC-20	TLX

MILEAGEAFTER	HIREENDDATE	MODEL	MAKE
28000	14-JUN-20	330i	BMW
35000	17-APR-21	Civic	Honda
28000	14-AUG-20	Telluride	Kia
17000	21-MAR-21	RangeRover	LandRover
36000	24-DEC-20	TLX	Acura

c.

1. List the names and phone numbers of clients who have taken out HireAgreements and finished their rental with an endMileage lower than 30,000.

   SELECT c.firstName, c.lastName, c.phoneNum
   FROM Clients c, HireAgreements h
   WHERE (h.mileageAfter < 30000) AND (c.clientNo = h.clientNo)

```
  FIRSTNAME LASTNAME    PHONENUM
0   Astarte   Morgan  3476152933
1      Jeff    Dixon  3052127866
2    Jordan   Tucker  8293872334
Index(['FIRSTNAME', 'LASTNAME', 'PHONENUM'], dtype='object')
```

2. List the staff members' name, home address and salaries that work out of outlet number '2'

SELECT s.firstName, s.lastName, s.homeAddress, s.salary, o.outletNo
FROM Staff s, Outlets o
WHERE (o.outletNo = 2) AND (s.outletNo = o.outletNo)

```
  FIRSTNAME LASTNAME                                HOMEADDRESS  SALARY  OUTLETNO
0      Greg     Ross  1443 Rhapsody Street, Gainesville, FL 32601  200000         2
1    Rafael    Muñoz            4400 NW 24th St, Miami, FL, 33132  300000         2
Index(['FIRSTNAME', 'LASTNAME', 'HOMEADDRESS', 'SALARY', 'OUTLETNO'], dtype='object')
```

3. List the outlet number and phone numbers of outlets located in NY.

SELECT o.outletNo, o.phoneNum, o.address
FROM Outlets o
WHERE (o.address LIKE '%GA%')

```
   OUTLETNO    PHONENUM                          ADDRESS
0         1  4044081399  4908 Scarlet Oak Wlak, GA 30128
1         5  6787040464  1451 Woodmont Lane NW, GA 30344
```

4. List all employees name and jobTitle who have salary greater than or equal to $20000

SELECT s.firstName, s.lastName, s.jobTitle, s.salary
FROM Staff s
WHERE (s.salary >= 200000)

```
  FIRSTNAME LASTNAME JOBTITLE  SALARY
0      Greg     Ross  Manager  200000
1    Rafael    Muñoz  Manager  300000
```

5. List all information inHire agreements for all vehicles with a capacity greater than 5.

SELECT *
FROM HireAgreement h, Vehicle v
WHERE (h.registrationNo = v.registrationNo) AND (v.capacity > 5)

```
   HIRENO  CLIENTNO  REGISTRATIONNO FIRSTNAME  ... CAPACITY CURMILEAGE  DAILYHIRERATE  OUTLETNO
0      30         4        55588333      Jeff  ...        8      22000            175         3

[1 rows x 21 columns]
Index(['HIRENO', 'CLIENTNO', 'REGISTRATIONNO', 'FIRSTNAME', 'LASTNAME',
       'HOMEADDRESS', 'PHONENUM', 'MILEAGEBEFORE', 'HIRESTARTDATE',
       'MILEAGEAFTER', 'HIREENDDATE', 'MODEL', 'MAKE', 'REGISTRATIONNO',
       'MODEL', 'MAKE', 'ENGINESIZE', 'CAPACITY', 'CURMILEAGE',
       'DAILYHIRERATE', 'OUTLETNO'],
      dtype='object')
```

d. https://github.com/nya8971/CSC423