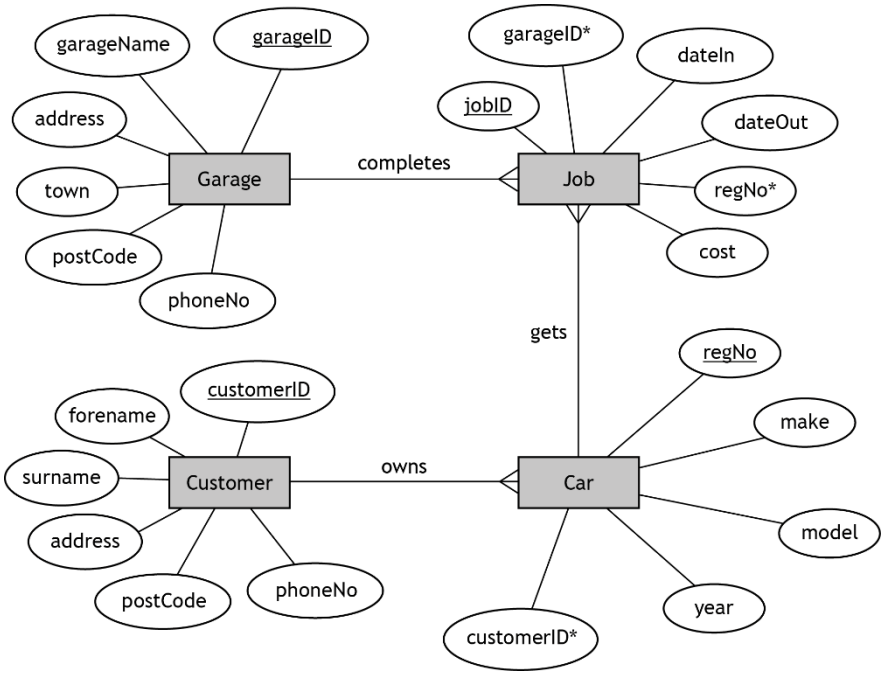
Car Services Database MIs 2020 Assignment – Additional SQL Questions

The database used in the 2020 Higher Assignment Task included four tables. The structure of the database and sample data for the tables are shown below.



Garage Table

garageName	address	town	postCode	phoneNo
Pit Stop Glasgow Shawlands	42 Kingsgate	Glasgow	G41 3EU	0141 632 9541
Pit Stop Edinburgh	98 Glen Road	Edinburgh	EH11 1KJ	0131 538 1297
Pit Stop Stirling	6 Royal Stuart Way	Stirling	FK8 7DS	0178 647 1946

Job Table

jobID	garageID	dateIn	dateOut	regNo	cost
J002	G59-G	02/01/2020	10/01/2020	ZN68 OXT	£393.60
J011	G61-E	02/01/2020	19/01/2020	ZC62 LCH	£507.64
J028	G98-K	05/01/2020	19/01/2020	YU15 CQT	£84.92

Car Table

regNo	make	model	year	customerID
50 J4C08	Subaru	Outback	2011	8291
83 5TU4RT	Mazda	3	2012	1872
AF66 XFP	Ford	F-150	2016	4668

Customer Table

customerID	forename	surname	address	postCode	phoneNo
7486	Ian	Arthur	330 West Street	G87 2VB	07989 914299
7563	David	Ballantyne	87 King's Place	G9 7WH	07873 468849
8869	Stuart	Barnes	256 Hope Street	KA6 0KS	07153 426507

Open the Car Services database.
For each of the following questions write and test the SQL required to create the described output. Each question involves two steps so will require two separate SQL statements. (You may use a sub-query if you have been taught that alternative approach.)
Make sure you create aliases where appropriate. Copy and paste all your code into the space provided.

Question 1 **(4 marks)**

The customer who had the most expensive car repair is to be sent a £50 voucher off their next repair. Display the full name, address and car registration of this customer.

Step 1 (saved as Q1MostExpensize)

```
SELECT MAX(cost) AS mostExpensive
FROM Job;
```

Step 2

```
SELECT forename, surname, address, Car.regNo
FROM Q1MostExpensive, Job, Car, Customer
WHERE cost = mostExpensive
AND Job.RegNo = Car.regNo
AND Car.customerID = Customer.customerID;
```

Single query solution

```
SELECT forename, surname, address, Car.regNo
FROM Job, Car, Customer
WHERE cost = (SELECT MAX(cost) FROM Job)
AND Job.RegNo = Car.regNo
AND Car.customerID = Customer.customerID;
```

One mark each for:

- Identifying the maximum
- Maximum used in WHERE
- Correct SELECT fields and FROM tables
- Joins between Job, Car, Customer

Question 2 **(4 marks)**

The company wish to find the make and model of the cars that are the cheapest to repair. Find the cost of the cheapest repair and then display the car make and model of any car whose repair cost less than £20 more than the cheapest repair.

Step 1 (saved as Q2CheapestJob)

```
SELECT MIN(cost) AS cheapest
FROM Job;
```

Step 2

```
SELECT make, model
FROM Car, Job, Q2CheapestJob
WHERE cost < cheapest + 20 AND Job.regNo = Car.regNo;
```

Single query solution

```
SELECT make, model
FROM Car, Job
WHERE cost < (SELECT MIN(cost) FROM Job;) + 20
AND Job.regNo = Car.regNo;
```

One mark each for:

- Identifying the minimum
- Minimum + 20 used in WHERE
- Correct SELECT fields and FROM tables
- Joins between Job, Car

Question 3 **(4 marks)**

Find the number of jobs completed by each garage. Display the name of any garages that have less than 15 jobs in the database.

Step 1 (saved as Q3GarageJobs)

```
SELECT garageName, COUNT(*) AS GarageJobs
FROM Garage, Job
WHERE Garage.garageID = Job.garageID
GROUP BY garageName;
```

Step 2

```
SELECT garageName
FROM Q3GarageJobs
WHERE garageJobs<15;
```

Note this could be used in Advanced Higher to demonstrate HAVING

One mark each for:

- Identifying the number of jobs for each garage
- Result from first query used in WHERE and compared to <15
- Correct SELECT fields and FROM tables
- Joins between Job, Garage

Question 4 **(4 marks)**

Find the number of customers each garage has carried out repairs for and display the largest number of customers found.

Step 1 (saved as Q4GarageCustomers)

```
SELECT garageName, COUNT(*) AS customerCount
FROM Garage, Job, Car, Customer
WHERE Garage.garageID = Job.garageID
AND Job.RegNo = Car.regNo
AND Car.customerID = Customer.customerID
GROUP BY garageName;
```

Step 2

```
SELECT MAX(customerCount) AS [Most customers in a garage]
FROM Q4GarageCustomers;
```

One mark each for:

- Identifying the number of customers grouped by garage
- Correct SELECT fields and FROM tables
- Joins between Garage, Job, Car, Customer
- Maximum customers identified