This is an open book assessment. You are encouraged to refer to your notes and any online resources. Do not confer with other people.

Six questions. Maximum 10 points for each question. Points will be awarded for correctness and for the simplicity and elegance of your code. Avoid using temp tables or variables in your answers, except for the variables needed in question 5.

1. Using the **stock** table and data given below, create a view called **stockmonthly** that shows the monthly total of the qty column for each item and month. Also include in your query a column called **rnk** that ranks the quantities in descending order for each item. Your result should look like this:

```
item        year        month       qty         rnk
----------- ----------- ----------- ----------- ----
1001        2020        1           890         1
1001        2020        2           832         2
1001        2019        11          340         3
1002        2019        12          603         1
1002        2020        3           172         2
1002        2020        4           150         3
1002        2019        11          120         4
```

```
CREATE TABLE stock
(item INTEGER NOT NULL
,dt DATE NOT NULL
,qty INTEGER NOT NULL
,PRIMARY KEY (item, dt));

INSERT INTO stock (item, dt, qty)
VALUES
 (1001,'2019-11-11',340)
,(1002,'2019-11-23',120)
,(1002,'2019-12-20',201)
,(1002,'2019-12-16',402)
,(1001,'2020-01-19',890)
,(1001,'2020-02-12',340)
,(1001,'2020-02-27',101)
,(1001,'2020-02-29',391)
,(1002,'2020-03-11',172)
,(1002,'2020-04-21',150);
```

2. Using the same **stock** table as in the previous question, write a query to retrieve the date and the qty for the row(s) with the *second highest* qty in the entire table. Your query should work without needing and modification to give the second highest result for *any* set of data in the table, not just for the data given. Use the stock table in your query; you don't need to use the view you created for the previous question. The result should be:

```
dt         qty
---------- -----------
2019-12-16 402
```

3. Using the table called **journey** and the sample data given below, write a query to display the following result. You can assume that the **descr** column always contains a hyphen between the start and end point and that the **distance** column always ends with either “mi” or “km”, giving the distance in either miles or kilometres. In your answer, multiply the miles by 1.609 to convert the miles to km for the distance_km column.

```
journey_start   journey_end    distance_km
--------------- -------------- ------------
London          Paris          342.000
New York        Los Angeles    3934.005
New York        Washington     326.627
Paris           Rome           1106.000
```

```
CREATE TABLE journey (descr VARCHAR(100) PRIMARY KEY, distance VARCHAR(7) NOT NULL);

INSERT INTO journey (descr, distance)
VALUES
 ('London-Paris','342km')
,('New York-Los Angeles','2445mi')
,('New York-Washington','203mi')
,('Paris-Rome',' 1106km');
```

4. Using the **programmer** and **skill** tables and the sample data given below, write a query to return the count of the number of people at each location who have the skill **C++** with a rating of **7 or more**. The result should be:

```
location             num
-------------------- -----------
Dublin               0
London               2
New York             1
```

```
CREATE TABLE programmer (employee_name VARCHAR(20) NOT NULL PRIMARY KEY, location VARCHAR(20)
NOT NULL);

CREATE TABLE skill (employee_name VARCHAR(20) NOT NULL, language VARCHAR(20) NOT NULL, rating
INT NOT NULL, PRIMARY KEY (employee_name, language));


INSERT INTO programmer (employee_name, location)s
VALUES
 ('Alan','London')
,('Belinda','New York')
,('Chuck','New York')
,('Diana','London')
,('Ed','New York')
,('Frank','London')
,('Gail','Dublin');

INSERT INTO skill (employee_name, language, rating)
VALUES
 ('Alan','C++',9)
,('Alan','Java',6)
,('Belinda','Java',10)
,('Belinda','Python',8)
,('Chuck','C++',7)
,('Diana','Python',10)
,('Diana','Java',5)
,('Ed','Java',8)
,('Frank','C++',9)
,('Frank','Python',6)
,('Gail','Java',6);
```

5. Using the same tables and data as in the previous question, write a stored procedure that retrieves the names and ratings of people for a given location and language. The location and language should be specified as parameters when you call your procedure.

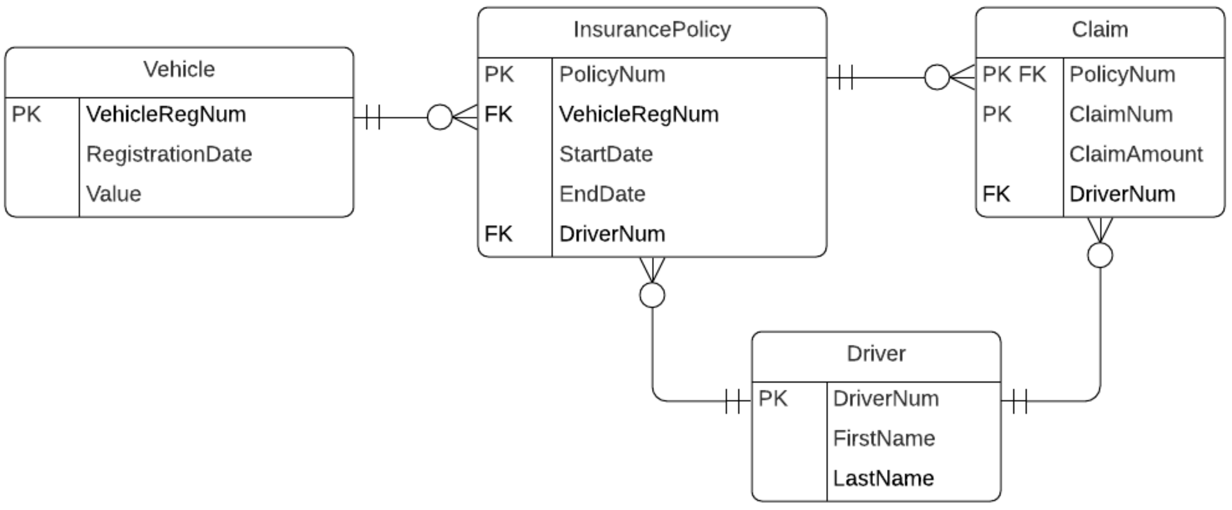
   When you have written your procedure you should be able to test it by executing the following command:

```
EXEC getskill @language = 'Python', @location = 'London';
```

   Expected result:

```
employee_name        rating
-------------------- -----------
Diana                10
Frank                6
```

6. Create four tables as shown in the following ER diagram. You must include the primary keys, foreign keys and some suitable data types. All columns should be non-nullable.



THE END 😊