

**Assignment 7 - Subqueries (100 points)**  
**Due Date: Monday, February 22<sup>nd</sup>, 11:59 PM**

**Objectives**

The goal of the assignment is to have you thinking about subqueries. This assignment focuses on how to write a subquery, use the IN operator when writing a subquery, use comparison operators when writing a subquery, write a correlated subquery including the use of the EXISTS operator, and use the ORDER BY clause when writing a subquery.

This assignment reinforces the following objectives:

- Learn the formal subquery definition and write a subquery.
- Learn the subquery restrictions.
- Use the IN operator when writing a subquery.
- Nest subqueries at multiple levels.
- Use comparison operators when writing a subquery.
- Use the ALL and ANY keywords when writing a subquery.
- Write a correlated subquery including the use of the EXISTS operator.
- Use the ORDER BY clause when writing a subquery.

This assignment uses the tables associated with the retailStore database.

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1. Write a SQL statement that displays the item number, item description, and price of the least expensive item in the database. (Use a subquery.)
2. Write a SQL statement that uses the IN operator to find the customer number, first name, and last name of each customer for which an order was created on 09/17/2018. (Use a subquery.)

Sample run:

```
+-----+-----+-----+
| customer number | first name | last name |
+-----+-----+-----+
| c00182          | Billy      | Rufton    |
+-----+-----+-----+
```

3. Write a SQL statement that displays the order ID and order date for each order created for the customer Andrew Murcia. (Use a subquery.)

Sample run:

```
+-----+-----+
| order_id | order_date |
+-----+-----+
| or0101425 | 2017-05-27 |
+-----+-----+
```

4. Write a SQL statement that displays the item number, item description, item price, and category for each item that has a unit price greater than the unit price of every item in category "Accessories".

Use either the ALL or ANY operator in your query. (Hint: Make sure you select the correct operator.)

Sample run:

```
+-----+-----+-----+-----+
| item number | description          | category | price |
+-----+-----+-----+-----+
| im01101048  | high quality basball bat | equipment | 64.99 |
| im01101049  | Sweater Fleece Vest    | clothing  | 99.00 |
| im01101050  | Cloudswift             | Footwear  | 70.00 |
+-----+-----+-----+-----+
```

5. Write a SQL statement that returns all those employees who have a salary greater than that of Lorentz and are in the same department as Abel. Display first name, last name, salary, and manager ID columns.

Sample run:

```
+-----+-----+-----+-----+
| first_name | last_name | salary  | manager_id |
+-----+-----+-----+-----+
| Eleni      | Zlotkey   | 10500.00 | 100         |
| Ellen      | Abel      | 11000.00 | 149         |
| Jonathon   | Taylor    | 8600.00  | 149         |
| Nick       | Hooper    | 9600.00  | 149         |
+-----+-----+-----+-----+
```

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6. Write a SQL statement returns a list of department IDs and average salaries where the department's average salary is less than Ernst's salary. (Use a subquery.)

Sample run:

```
+-----+-----+
| department id | avgerage |
+-----+-----+
|          10 | 4300.000000 |
|          50 | 3371.428571 |
+-----+-----+
```

7. Write a SQL statement that returns the department ID and minimum salary of all employees, grouped by department ID. This minimum salary must be greater than the minimum salary of those employees whose department ID is **not** equal to 50. (Use a subquery.)

Sample run:

```
+-----+-----+
| department id | minimum salary |
+-----+-----+
|          NULL |          7000.00 |
|           10 |          4100.00 |
|           60 |          4200.00 |
+-----+-----+
```

8. Write a SQL statement that finds the last names of all employees whose salaries are the same as the minimum salary for any department. (Use a subquery.)

Sample run:

```
+-----+
| last name |
+-----+
| Kochhar   |
| De Haan   |
| Lorentz   |
+-----+
```

9. Write a pair-wise subquery listing the last name, first name, department ID, and manager ID for all employees that have the same department ID and manager ID as employee 141. Exclude employee 141 from the result set. (Use a subquery.)

Sample run:

```
+-----+-----+-----+-----+
| last name | first name | department id | manager id |
+-----+-----+-----+-----+
| Davies    | Curtis    |          50 |          124 |
| Matos     | Randall   |          50 |          124 |
| Vargas    | Peter     |          50 |          124 |
| Bell      | George    |          50 |          124 |
| Heiden    | Tiffany   |          50 |          124 |
+-----+-----+-----+-----+
```

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10. Write a non-pair-wise subquery listing the last name, first name, department ID, and manager ID for all employees that have the same department\_ID and manager ID as employee 141. (Use a subquery.)

Sample run:

last name	first name	department id	manager id
Rajs	Trenna	50	124
Davies	Curtis	50	124
Matos	Randall	50	124
Vargas	Peter	50	124
Bell	George	50	124
Heiden	Tiffany	50	124

11. Write a SQL statement that lists the highest earners for each department. Include the last name, department ID, and the salary for each employee. (Use a subquery.)

Sample run:

last name	department id	salary
King	90	24000.00
Hunold	60	9000.00
Mourgos	50	5800.00
Abel	80	11000.00
Whalen	10	4400.00
Hartstein	20	13000.00
Higgins	110	12000.00
Barbosa Souza	85	9500.00
Saikawa	10	4400.00

### Submission Instructions:

- For each of the queries above, submit the query and the result from running the query. Please use the provided SQL file to write your submissions.
- You will need to label your assignment with your first initial, last name, and the name of the assignment.  
**Example:** *hibrahim\_assignment7.sql* and *hibrahim\_assignment7.txt*
- Zip the two files together to create one compressed file. **Example:** *hibrahim\_assignment7.zip*
- Submit the zipped file containing the script and output .txt via Canvas.
- Remember to include the query number as a comment at each step.
- Read your output .txt file before you submitting.