Lab 2. Multi-table Joins and Set-based Operations

Submission:

Please upload the following files to the Lab 2 Assignment on Brightspace.

- If you decide to skip the lab, make sure you submit the **check-off questions** (highlighted with green background) in a text document named **<lastname>_<firstname>_checkoff.sql** before **Wednesday, 7:30 am**.
- **All students are expected to submit your answers to all lab questions in a text document with the name <lastname>_<firstname>_lab1.sql by the due date.**
- Please include both your code and the results in the **.sql** documents for full credits. For detailed requirements, please refer to the “Lab and Homework Submission Guideline.”

Please use Eagle database for all questions in this lab.

Objectives:

- Practice performing multi-table queries and interpreting the results
- Practice performing outer joins (left join, right join, full outer join)
- Practice performing set-based operations (minus, intersect, union, union all)

Notes

- Hard code only those values explicitly stated in the problem. Never hard-code values determined dynamically.
- Do NOT include “extra” tables or columns in any query. It reduces query efficiency and increases the likelihood of error. The columns that should be displayed are underlined.
- Submissions that fail to follow the format will receive a 50% penalty.

Questions

Inner Join with Reasoning	
1 1pt	For each part in the Accessories category (CategoryID is 'ACCESS') of the INVENTORYPART table, display its part number, part description, and the average quantity sold (OrderQuantity) of all orders placed for that part. Round the average to 1 decimal place. Sort the results by average quantity in descending order.
2a 1pt	For each month in which part 'DVD-001' was ordered, display its order month, order year, and the average quantity (OrderQuantity) sold **during that month**. Round the quantity to 1 decimal place. Sort the results first by year, then month.
2b 0.5pt	Based on the results of question 2a above, briefly explain how the average OrderQuantity changed over the months.
3a 1pt	For each month in which part 'DVD-001' was ordered, display its order month and year (as one column, in the format of '01-2022'), and the total quantity (OrderQuantity) sold **during that month**. Round the quantity to 1 decimal place.
3b 0.5pt	Do the same as 3a, in addition, sort the results by chronological order. (e.g., …11-2010, 12-2010, 01-2011…)
3c 0.5pt	Based on the results of question 3b above, briefly explain how you would plan the procurement of part 'DVD-001' for the rest months of 2011?
4 1pt	For each month in which part 'DVD-001' was ordered, display its order month, order year, and the number of orders placed **during that month**. Sort the results first by year, then month.
5a 0.5pt	Explain the relationship between questions 2, 3, 4. What is the shared, underlying question that each is attempting, at least in part, to answer?
5b 0.5pt	Based on the answers to questions 2, 3, 4, what can we determine about the sales of part 'DVD-001'?
5c 0.5pt	Do the answers to question 2, 3, 4 support or conflict with each other? Does this increase or decrease our confidence in the results?
6a 1pt	For order ID '2000000007', display the order ID, shipment ID(s), package numbers, and shipped date. Also include the name of the person (ShipName) and the shipping address (ShipAddress) to which each shipment has been sent.
6b 0.5pt	Briefly explain the results of question 6a above.
Outer Join	
7a 1pt	Find the residential customers (whose company name is null) from Pennsylvania (state is 'PA') and all orders they have placed. Display their names in last name, (comma) first

	name format (e.g. Simpson, Lisa), customer ID, and order ID. **Using a left outer join** for this question. NOTE: Your results should include all Pennsylvania residential customers even if they have not placed an order.
7b 0.5pt	Find the residential customers (whose company name is null) from Pennsylvania (state is ‘PA’) and all orders they have placed. Display their names in last name, (comma) first name format (e.g. Simpson, Lisa), customer ID, and order ID. **Using a right outer join** for this question. NOTE: Your results should include all Pennsylvania residential customers even if they have not placed an order.
8 1pt	Display the part number and category name for all parts and all categories in the INVENTORYPART and CATEGORY tables **regardless of any missing information**.
9a 1pt	For order ID ‘2001000807’, display the customer name in first name (space) last name format (e.g. Lisa Simpson), customer ID, and the order date. **Regardless of whether the order has been shipped**, display all shipment ID(s), package numbers assigned, the name to which each package is to be (or has been) sent (shipname), and the date on which it was sent (shippeddate).
9b 1pt	For all orders that haven’t been shipped (without shippeddate), display the customer name in first name (space) last name format (e.g. Lisa Simpson), customer ID, and the order date, shipment ID(s), and the name to which each package is to be (or has been) sent (shipname).
Set Based Operation	
10a 0.5pt	Use an INTERSECT statement, display distinctly the customer ID of any Pennsylvania (state is ‘PA’) customer who has placed an order.
10b 0.5pt	Use a MINUS statement, display distinctly the customer ID of any Pennsylvania (state is ‘PA’) customer who has never placed an order.
10c 0.5pt	Use an INTERSECT statement, display distinctly the customer ID of any Pennsylvania (state is ‘PA’) customer who placed an order in 2011.
10d 0.5pt	Use a MINUS statement, display distinctly the customer ID of any Pennsylvania (state is ‘PA’) customer who did NOT place an order in 2011. (Hint: the number of rows returned by Q8a, Q8b, Q8c, Q8d should match in the following way: Q8a + Q8b = Q8c + Q8d)
11a 1pt	Display distinct part number of any cable part (CategoryID is ‘CAB’) which has been ordered at least once. Use CUSTORDERLINE table to determine if a part has been ordered or not.
11b 0.5pt	Display distinct part number of any cable part (CategoryID is ‘CAB’) which has never been ordered.

11c 0.5pt	Display distinct part number of any cable part (CategoryID is 'CAB') which was ordered at least once since 2010.
11d 0.5pt	Display distinct part number of any cable part (CategoryID is 'CAB') which was never ordered since 2010. (Hint: the number of rows returned by Q9a, Q9b, Q9c, Q9d should match in the following way: Q9a + Q9b = Q9c + Q9d)
12a 0.5pt	Display the first name and last name for any Florida customer (state is 'FL') in CUSTOMER table as well as the first name and last name for all Eagle employees in EMPLOYEE table. The results should **include only distinct records**. Sort the results by first name, then last name in ascending order.
12b 0.5pt	Display the first name and last name for any Florida customer (state is 'FL') in CUSTOMER table as well as the first name and last name for all Eagle employees in EMPLOYEE table. The results should **also include the repeating records**. Sort the results by first name, then last name in ascending order.
13a 1pt	Find all customers (including both residential and commercial customers) from Pennsylvania (state is 'PA') and all orders they have placed. Display their names (for residential customers, display customer names in the format "John Doe, residential"; for commercial customers, display customer names and the company name in the format "John Doe, Google"), customer ID, order ID, and order date. Sort the results by customer ID first, then by order ID. Note: Your results should include all Pennsylvania customers even if they have not placed an order. Please use the UNION clause.
13b 0.5pt	Please retrieve the same information as 13a without using the UNION clause.