# MIS 531: Homework SQL-2 (Part-1)

This assignment consists of a series of SQL questions. For each question, please include your:

- Your final SQL query
- A natural language explanation of the query (please include explanations as a multi-line comment AFTER your query, i.e., enclosed within /* … */).

**Submission Instructions**

*1)* By submitting each query: ***you affirm that the work submitted is your own and that you did not receive unauthorized assistance from anyone outside your two-person team nor did you provide unauthorized assistance to anyone.***

**This is a two-person group assignment**. Please do not solve the problem for others as you will not be helping them learn. The homework does not require a perfect score to do well (i.e., has built in bonus points). Please note, the maximum score (across both parts of the homework) is 100. In other words, if you score over 100, your score is reduced to 100 (*so there should be no incentive to cheat, instead please focus on learning*).

Please do not share your work or solutions in part or whole. **Policies for academic integrity** are specified in the syllabus. You can approach the instructor with questions or clarifications.

2) Use the D2L Turnitin dropbox to submit a soft copy of EACH question in your assignment separately. Only the final query for each question is required. Please keep the final query at the top of your file so the graders can find it easily if you include intermediate queries (to show how you solved each step).

3) Your queries must be executable. In other words: to grade them, we **must be able to copy-paste from your submitted file and run them in SQL Developer**. Please test this (e.g., on your machine, after preparing your document) to ensure you do not lose points. Please submit a text (ASCII) file (i.e., not a word or pdf file).

4) Please start early. SQL requires a good amount of practice and learning. Also, by leaving work for the last minute, you incur many risks including a potential server outage affecting your work.

5) The submission process takes time (and requires confirmation). Please do NOT wait till close to the deadline to submit your individual queries on D2L (as you may cross over into the late period and automatically incur the 10% penalty). To be fair to all students, we do NOT selectively waive the late penalty.

6) Keep the following instructions in mind while solving the queries.
   - The sub-parts of a query are **CUMULATIVE** (i.e., build on previous parts).
   - Please solve the queries in stages, i.e., write SQL to answer each part to reduce the likelihood of making errors / finding errors easily. Common ways to structure your query-writing include:
     - Start with a single table (e.g., employee data), add additional tables in stages
     - Add aggregation and/or filtering requirements (WHERE / HAVING clauses) in stages
     - Add formatting and sorting requirements in stages

**Reminders**

- Submit one file (with your final query) for each question
- All column Headings are case sensitive (for the entire homework)
- The sub-parts of each query are CUMULATIVE (requirement b) builds on requirement a), and so on )

# Part-1 Group (2-person)

**Question-1**

a) For every customer and shipper display the following information:
   - Type: to denote if it's a customer or a shipper(show: Customer for customers and Shipper for shippers)
   - Company Name: the company name of the customer or shipper
   - Number of Orders: the number of orders this customer has placed (or shipper has handled). If there are none, show 0.
   - Last Order Date: the date of the last time a customer placed an order or a shipper shipped an order. Format the date as YYYY-MM-DD, e.g., 2021-09-25. If there is no date, show a hyphen: -

b) Restrict yourself to customers with 3 or fewer orders and shippers with 50 or fewer orders.

c) Sort the results by Last Order Date (latest first), and the Type. The "-" date values should be at the end.

Your output should be like the following (including column headings):

| Type | Company Name | Number of Orders | Last Order Date |
|---|---|---|---|
| Customer | Test Customer | 2 | 2021-04-01 |
| Customer | Customer A | 1 | 2021-03-01 |
| Shipper | Shipper A | 42 | 2021-03-01 |
| … | | | |
| Customer | Test Customer2 | 0 | - |
| | | | |

Reminder: the **sub-parts are cumulative** (for the entire homework). For example, since we're on question 1, that means by the end of Q1 you should have a single query that satisfies ALL requirements across ALL sub-parts.

**Question-2**

a) For each employee, display his/her employee number (heading: Employee ID), combination of employee title of courtesy, employee first name and employee last name together (e.g., Mr. Wilbur Wildcat, heading: Employee Name), and hire date (heading: Start Date).

b) Additionally, display for each employee the job title of their manager (if they have a manager). If they do not have a manager, display `No Manager` (heading: Manager Title).

c) For each employee, show the average lead time their orders have taken to ship (heading: Avg Time to Ship). E.g., if employee Wilma manages an order with the order date of 01-SEP-2020 and shipped date of 10-SEP-2020, the lead time to ship that order is 9 days (format: 99.99).

d) For each employee, also show the number of orders they have managed over all time (heading: Number of Orders).
e) In addition to this, for each employee, show the (net) total revenue (heading: Total Revenue, format: USD $900,000.99) the employee has earned for the company over the course of their time at the corporation. Revenue per employee is calculated after removing the discount % from the selling price of product in the order.
   To illustrate for one order: suppose Wilma's order has one item priced at $20 and the quantity sold was 50. The gross revenue is 20 x 50 = 1,000. Suppose the discount is 0.10 (i.e., 10%). The net revenue is 900.
f) Restrict your results to employees that have more than 60 orders.
g) Sort the results by employee ID.

**Question-3**

a) For each quarter in 2020, display the Quarter (heading: Quarters). Note: a year has four quarters: Q1, Q2, Q3, Q4. For each quarter, display a cross-tabulation of the revenue (we refer to this as: Sales). Recall from a previous question that Revenue means the net dollar value of sales (i.e., after discount). Use a $999,999.99 format
b) Restrict your results to the following product lines: Beverages, Condiments, Confections, Dairy Products and Produce. For the headings, we demonstrate by example. E.g., for Beverages the heading is: Sales - Beverages. See the example output seen below, for headings and formatting.
c) Sort the results by the Quarters.
d) Also show the Total Sales for the quarter (i.e., the total of sales for the 5 product lines we have)
e) We use the following (hypothetical) table (showing Q1, Q2; your results should have all 4 quarters) to illustrate.

| Quarters | Sales - Beverages | Sales - Condiments | Sales - Confections | Sales – Dairy Products | Sales - Produce | Total Sales |
|---|---|---|---|---|---|---|
| Q1 | $10,000.01 | $20,000.00 | $10,000.00 | $30,000.01 | $10,000.00 | $80,000.02 |
| Q2 | $12,000.00 | $18,000.01 | $10,000.00 | $10,000.01 | $20,000.00 | $70,000.02 |

Hint: look up the use of the Oracle PIVOT() function. Using a WITH Clause or inline select(s) should help you.

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## Homework FAQ

**Question**: Where can I run and test homework queries?
**Answer**: The queries for your homework are to be executed using your Oracle accounts with SQL Developer

**Question**: Where can I find the dataset to answer the questions?
**Answer**: The queries are based on the ***CORP*** database (owner is CORP). It is recommended that you get familiar with both the structure and the contents of the database to help you better understand the query requirements and validate your answers. As a quick recap, the "describe <table-name>" command lets you see the structure of tables (this is also posted on the website). Doing a "SELECT * FROM <owner>.<table-name>;" will let you see all the data in the table.

**Question**: Can I get partial credit if the solution is not complete?
**Answer**: Yes, partial credit is available for solutions, so please build your SQL queries in stages.

**Question**: What is expected in the textual explanation of my answer?
**Answer**: The textual explanation of your queries consists of a natural language (i.e., English, not SQL) description of how you solved the query; including an explanation of how you chose to write the WHERE / GROUP BY / HAVING clauses. A clearly specified approach will be considered when awarding points. If you aren't able to explain your query, it will cost you points since an understanding of the query was not demonstrated. See the sample homework for some examples.

**Question**: Can I create temporary tables to help me answer queries?
**Answer**: You can use the WITH clause or inline SELECTs. However, you should NOT run DDL statements to create tables / views to answer your queries (in other words, your solution should be in the form of a single query statement that is terminated with a semi-colon).

**Question**: Do I lose points if I do not have the most efficient solution?
**Answer**: We care about the correct logic used (not just the correct answer).

**Question**: Can I compute some results and hard code them into the answers?
**Answer**: Do not hard code any computed values into your query.

**Question**: Can I add extra formatting for readability?
**Answer**: You may add extra formatting to your output for readability (but do include formatting we ask for). You may need to add extra formatting to get the output in an easy to read format (please try and ensure that a single row of output fits in a single line of the screen).

**Question**: What submission file formats are acceptable?
**Answer**: Please use an ASCII text file (.txt) only. Do not use other formats like Word or PDF.
**Reason**: we need to copy and paste and run your code (and word/pdf sometimes adds special characters for line breaks, smart-quotes, formatting, etc. that prevent your code from being executed without errors)

**Question**: Can I help someone with their homework, e.g., show them my code or see their code?
**Answer**: No.
However, you can talk to the instructor or a TA (you can show us your code to get help)

**Question**: Can I help someone understand concepts?

**Answer**: Yes, if someone is having trouble with subqueries (for example), you can use examples we covered in class or in the practice problems to help them understand. Please do NOT use the homework problem as an example. Do NOT show anyone your solution. Please do not see someone else's solution either (e.g., to debug a problem). Solutions may be shown to the TAs or the instructor. However, we will avoid telling you "is this correct" or "wrong". Instead, you will need to be specific in terms of "here's a problem I have, e.g., this code provides the following error when run."

**Question**: Can I suggest that someone use a specific pattern (e.g., "try a subquery for that question")
**Answer**: Yes, if all you say is, "Try a GROUP BY for that query." (or: HAVING / OUTER JOIN / subquery / WITH clause, etc.). Please do NOT share any details of the pattern (e.g., what elements or code should be included in the subquery, clause, etc.).

**If you have any questions, please email for clarifications (please do not assume).**