Stevens Institute of Technology
Castle Point on Hudson
Hoboken, NJ 07030

CS 561 – SQL Programming Assignment 1

Due Dates: 11/5/2021 (Mon) for Sec. A & B

Objectives

In this assignment, you will *express* "complex" OLAP queries in SQL. The key point of the exercise is to observe the complexity of expressing the type of such queries despite relatively simple ideas of the queries themselves. Your mission (in addition to writing the SQL queries) is to consider the reasons for the complexity of the *expression* of these queries.

Description

Generate separate reports/output based on the following queries (one report for each of the queries):

1. For each *customer*, compute the *minimum* and *maximum* sales quantities along with the *corresponding products, dates* (i.e., dates of those maximum and minimum sales quantities) and the *states* in which the sale transactions took place. For the same *customer*, also compute the *average* sales quantity.
2. For each combination of *customer* and *product*, output the *maximum sales quantities for October* (regardless of the year, that is, both 10/11/2016 and 10/23/2019 are considered sales transactions for October) and *minimum sales quantities for November and December (again, regardless of the year) in 3 separate columns*. Like the first report, display the *corresponding dates* (i.e., dates of those maximum and minimum sales quantities). Furthermore, for October (MAX), include only the sales that occurred after 2017 (that is, not to include sales that occurred in 2017 or earlier); for November (MIN) and December (MIN), include all sales.
3. For *each of the 12 months* (regardless of the year), find the *most "popular"* and *least "popular" products* (those products with most and least total sales quantities) and the corresponding *total sales quantities (i.e., SUMs)*.
4. For each *product*, find the "*most favorable*" *month* (when most amount of the product was sold) and the "*least favorable*" *month* (when the least amount of the product was sold).
5. For the years 2016, 2017, 2018, 2019 and 2020, show, for each *product* and *customer* combination, the *average sales quantities for the 4 states*, 'CT', 'NY', 'NJ' and 'PA' (in four separate columns). Also compute the *average for the "whole" year* (again ignoring the YEAR component, meaning simply compute AVG) along with the *total quantities* (SUM) and the *counts* (COUNT).

The following are sample output reports – quantities displayed are for illustration only (not the actual values).

Report #1:

CUSTOMER	MIN_Q	MIN_PROD	MIN_DATE	ST	MAX_Q	MAX_PROD	MAX_DATE	ST	AVG_Q
Bloom	12	Pepsi	01/01/2016	NJ	2893	Apple	09/25/2019	NY	1435
Sam	1	Milk	02/15/2017	NJ	259	Banana	03/23/2018	CT	56
Emily	1	Bread	07/01/2018	NY	3087	Milk	02/02/2016	NJ	1512
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Report #2:

CUSTOMER	PRODUCT	OCT_MAX	OCT_DATE	NOV_MIN	NOV_DATE	DEC_MIN	DEC_DATE
Sam	Egg	8	10/11/2019	3234	11/24/2016	2432	12/03/2018
Helen	Cookies	92	10/22/2018	4342	11/14/2020	9483	12/23/2017
Bloom	Butter	45	10/31/2020	1923	11/10/2017	2596	12/11/2016
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Report #3:

MONTH	MOST_POPULAR_PROD	MOST_POP_TOTAL_Q	LEAST_POPULAR_PROD	LEAST_POP_TOTAL_Q
1	Eggs	497214	Pepsi	55526
2	Milk	1874794	Banana	23126
3	Pepsi	974531	Milk	19958

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Report #4:

PRODUCT	MOST_FAV_MO	LEAST_FAV_MO
Egg	4	12
Apple	1	11
Banana	3	2

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Report #5:

PRODUCT	CUSTOMER	CT_AVG	NY_AVG	NJ_AVG	PA_AVG	AVERAGE	TOTAL	COUNT
Pepsi	Sam	1923	4241	2383	1325	2988	38848	13
Milk	Emily	239	9872	142	2435	2663	21307	8
Bread	Helen	2534	981	4239	1987	2781	25032	9

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Grading

NOTE: A query with syntax errors will lose 50% of the points for the query.

Submission

Submit **one file** containing all of the 5 queries with your name and CWID on it on Canvas. The file type must be "TXT".

Please include a "README" section in the same file if any special instructions are required.

You can discuss the "ideas" with your class mates or your friends, but the final queries must be your own work. If I determine that your queries are copies of someone else's, both you and that someone else will be disciplined (you will receive 0 for the entire assignment) and possibly receive additional penalties for the course.