**QUERY #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.**

=>

with Q1 as

(

select cust,min(quant) MIN\_Q,max(quant) MAX\_Q,round(avg(quant),2) AVG\_Q

from sales

group by cust

),

Q2 as

(

select Q1.cust,Q1.MIN\_Q,s.prod MIN\_PROD,s.date MIN\_DATE,s.state MIN\_ST,Q1.MAX\_Q,Q1.AVG\_Q

from Q1,sales s

where Q1.cust=s.cust and Q1.MIN\_Q=s.quant

)

select Q2.cust CUSTOMER,Q2.MIN\_Q,Q2.MIN\_PROD,Q2.MIN\_DATE,Q2.min\_st ST,Q2.MAX\_Q,s.prod MAX\_PROD,s.date MAX\_DATE,s.state ST,Q2.AVG\_Q

from Q2,Sales s

where Q2.cust = s.cust and Q2.MAX\_Q = s.quant

**OUTPUT:**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Customer | min\_q | min\_prod | min\_date | st | max\_q | max\_prod | max\_date | st | avg\_q |
| Boo | 1 | Grapes | 12/18/2020 | NJ | 1000 | Dates | 2/24/2020 | NY | 487.51 |
| Mia | 1 | Ice | 8/11/2019 | PA | 999 | Cherry | 8/19/2019 | NJ | 500.55 |
| Dan | 1 | Cherry | 2/18/2017 | NY | 1000 | Apple | 1/21/2018 | NJ | 508.26 |
| Dan | 1 | Dates | 8/13/2020 | PA | 1000 | Apple | 1/21/2018 | NJ | 508.26 |
| Emily | 2 | Butter | 3/18/2016 | NJ | 999 | Cherry | 4/7/2020 | PA | 471.71 |
| Chae | 1 | Apple | 10/22/2016 | CT | 999 | Jellies | 5/2/2018 | CT | 500.5 |
| Sam | 1 | Dates | 9/4/2019 | NJ | 1000 | Cherry | 2/28/2017 | NY | 511.17 |
| Sam | 1 | Apple | 9/14/2020 | PA | 1000 | Cherry | 2/28/2017 | NY | 511.17 |
| Helen | 1 | Apple | 4/1/2016 | PA | 1000 | Eggs | 10/24/2020 | PA | 502.5 |
| Helen | 1 | Eggs | 1/18/2018 | CT | 1000 | Eggs | 10/24/2020 | PA | 502.5 |
| Helen | 1 | Fish | 5/27/2018 | CT | 1000 | Eggs | 10/24/2020 | PA | 502.5 |
| Helen | 1 | Grapes | 7/23/2017 | PA | 1000 | Eggs | 10/24/2020 | PA | 502.5 |
| Sam | 1 | Dates | 9/4/2019 | NJ | 1000 | Cherry | 7/15/2019 | NY | 511.17 |
| Sam | 1 | Apple | 9/14/2020 | PA | 1000 | Cherry | 7/15/2019 | NY | 511.17 |
| Sam | 1 | Dates | 9/4/2019 | NJ | 1000 | Apple | 6/13/2020 | NJ | 511.17 |
| Sam | 1 | Apple | 9/14/2020 | PA | 1000 | Apple | 6/13/2020 | NJ | 511.17 |
| Sam | 1 | Dates | 9/4/2019 | NJ | 1000 | Grapes | 12/4/2020 | NJ | 511.17 |
| Sam | 1 | Apple | 9/14/2020 | PA | 1000 | Grapes | 12/4/2020 | NJ | 511.17 |
| Claire | 4 | Ham | 5/20/2018 | CT | 1000 | Fish | 1/6/2016 | CT | 504.35 |
| Wally | 1 | Jellies | 5/16/2018 | CT | 1000 | Jellies | 3/3/2019 | NY | 517.92 |
| Wally | 1 | Ham | 5/1/2019 | NJ | 1000 | Jellies | 3/3/2019 | NY | 517.92 |
| Wally | 1 | Butter | 11/17/2020 | CT | 1000 | Jellies | 3/3/2019 | NY | 517.92 |
| Boo | 1 | Grapes | 12/18/2020 | NJ | 1000 | Fish | 4/10/2018 | PA | 487.51 |
| Boo | 1 | Grapes | 12/18/2020 | NJ | 1000 | Cherry | 3/4/2017 | NY | 487.51 |

QUERY #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.

=>

With Q1 as

(

select cust,prod,max(quant) OCT\_MAX

from sales

where month=10 and year>2017

group by cust,prod

),

OCT as

(

select Q1.cust,Q1.prod,Q1.OCT\_MAX,s.date OCT\_DATE

from Q1,sales s

where month=10 and year>2017 and Q1.cust = s.cust and Q1.prod = s.prod and Q1.OCT\_MAX = s.quant

),

Q2 as

(

select cust,prod,min(quant) NOV\_MIN

from sales

where month=11

group by cust,prod

),

NOV as

(

select Q2.cust,Q2.prod,Q2.NOV\_MIN,s.date NOV\_DATE

from Q2,sales s

where month=11 and Q2.cust=s.cust and Q2.prod=s.prod and Q2.NOV\_MIN = s.quant

),

Q3 as

(

select cust,prod,min(quant) DEC\_MIN

from sales

where month=12

group by cust,prod

),

DEC as

(

select Q3.cust,Q3.prod,Q3.DEC\_MIN,s.date DEC\_DATE

from Q3,sales s

where month=12 and Q3.cust=s.cust and Q3.prod=s.prod and Q3.DEC\_MIN=s.quant

)

select OCT.cust as Customer,OCT.prod,OCT.OCT\_MAX as OCT,OCT.OCT\_DATE,NOV.NOV\_MIN,NOV.NOV\_DATE,DEC.DEC\_MIN,DEC.DEC\_DATE

From OCT full outer join NOV using (cust,prod) full outer join DEC using (cust,prod)

QUERY #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)

with Q1 as

(

select month,prod,sum(quant) sum\_q

from sales

group by month,prod

),

Q2 as

(

select month,max(sum\_q) max\_q,min(sum\_q) min\_q

from Q1

group by month

),

MAX\_PROD as

(

select Q2.month,Q1.prod,Q2.max\_q,Q2.min\_q

from Q2,Q1

where Q2.month = Q1.month

and Q2.max\_q = Q1.sum\_q

)

select mp.month,mp.prod as MOST\_POPULAR\_PROD,mp.max\_q MOST\_POP\_TOTAL\_Q,Q1.prod as LEAST\_POPULAR\_PROD,mp.min\_q as LEAST\_POP\_TOTAL\_Q

from MAX\_PROD mp,Q1

where mp.month = Q1.month

and mp.min\_q = Q1.sum\_q

order by mp.month;

QUERY #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).

with Q1 as

(

select month,prod,sum(quant) sum\_q

from sales

group by month,prod

),

Q2 as

(

select prod,max(sum\_q) max\_q,min(sum\_q) min\_q

from Q1

group by prod

),

MOST\_FAV as

(

select Q1.prod,Q1.month MOST\_FAV\_MO

from Q2,Q1

where Q2.max\_q = Q1.sum\_q

and Q2.prod = Q1.prod

),

LEAST\_FAV as

(

select Q1.prod,Q1.month LEAST\_FAV\_MO

from Q2,Q1

where Q2.min\_q = Q1.sum\_q

and Q2.prod = Q1.prod

)

select M1.prod as PRODUCT,M1.MOST\_FAV\_MO,L1.LEAST\_FAV\_MO

from MOST\_FAV M1,LEAST\_FAV L1

where M1.prod = L1.prod

order by M1.prod;

QUERY #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).

with Q1 as(

select cust, prod,round(avg(quant)) TOTAL\_AVG,sum(quant) SUM\_Q,count(\*) COUNT

from sales

group by cust,prod

),

CT as(

select cust,prod,round(avg(quant)) CT\_AVG

from sales

where year between 2016 and 2020 and state = 'CT'

group by cust,prod

),

NY as(

select cust,prod,round(avg(quant)) NY\_AVG

from sales

where year between 2016 and 2020 and state = 'NY'

group by cust,prod

),

NJ as(

select cust,prod,round(avg(quant)) NJ\_AVG

from sales

where year between 2016 and 2020 and state = 'NJ'

group by cust,prod

),

PA as(

select cust,prod,round(avg(quant)) PA\_AVG

from sales

where year between 2016 and 2020 and state = 'PA'

group by cust,prod

)

select Q1.prod as PRODUCT,Q1.cust as CUSTOMER,CT.CT\_AVG,NY.NY\_AVG,NJ.NJ\_AVG,PA.PA\_AVG,Q1.TOTAL\_AVG AVERAGE,Q1.Sum\_Q TOTAL,Q1.COUNT

from Q1 natural full outer join CT natural full outer join NY natural full outer join NJ natural full outer join PA;