**Solution 1-**

WITH Q1 AS

(SELECT MAX\_QUANT, PROD AS MAX\_PROD, STATE AS MAX\_ST, concat(month,'/',day,'/',year) as max\_date FROM sales S1 NATURAL FULL JOIN

(Select CUST, max(QUANT) AS MAX\_QUANT FROM SALES GROUP BY CUST ORDER BY CUST ) S2

WHERE QUANT = MAX\_QUANT ),

Q2 AS

(SELECT MIN\_QUANT, PROD AS MIN\_PROD, STATE AS MIN\_ST, concat(month,'/',day,'/',year) as min\_date FROM sales S1 NATURAL FULL JOIN

(Select CUST, MIN(QUANT) AS MIN\_QUANT FROM SALES GROUP BY CUST ORDER BY CUST ) S2

WHERE QUANT = MIN\_QUANT ) ,

Q3 AS

(SELECT CUST, ROUND(AVG(QUANT),2) AS AVERG FROM SALES GROUP BY CUST)

SELECT CUST, MAX\_PROD, MAX\_QUANT, MAX\_ST, max\_date, MIN\_PROD, MIN\_QUANT, MIN\_ST, min\_date , AVERG

FROM Q1 NATURAL FULL JOIN Q2 NATURAL FULL JOIN Q3

ORDER BY CUST

**Solutions 2-**

SELECT \* FROM

( SELECT CUST, PROD, quant AS JAN\_MIN, CONCAT(month,'/',day,'/',year) AS JAN\_DATE

FROM SALES a WHERE quant = (select min(quant) from sales where cust = a.cust and prod = a.prod and MONTH = 01 GROUP BY CUST, PROD ) ORDER BY CUST ) T1 NATURAL FULL JOIN

( SELECT CUST, PROD, quant AS FEB\_MAX, CONCAT(month,'/',day,'/',year) AS FEB\_DATE FROM SALES b WHERE quant = (select MAX(quant) from sales where cust = b.cust and prod = b.prod and MONTH = 02 GROUP BY CUST, PROD ) ORDER BY CUST ) T2 NATURAL FULL JOIN

( SELECT CUST, PROD, quant AS MAR\_MAX, CONCAT(month,'/',day,'/',year) AS MAR\_DATE FROM SALES c WHERE quant = (select MAX(quant) from sales where cust = c.cust and prod = c.prod and MONTH = 03 GROUP BY CUST, PROD ) ORDER BY CUST ) T3 NATURAL FULL JOIN

(SELECT \* FROM

(select distinct(cust) from sales) S1,

(select distinct(prod) from sales ) S2

) T4

ORDER BY CUST,PROD

**Solution 3-**

WITH Q1 AS

(select month, Min\_quant, LEAST\_PROFIT\_DAY, LEAST\_PROFIT\_TOTAL\_Q from

(select day as LEAST\_PROFIT\_DAY, quant, SUM(QUANT) AS LEAST\_PROFIT\_TOTAL\_Q from sales GROUP BY DAY, QUANT) S1 Natural full join

(select month, min(quant) as Min\_quant from sales group by month ) S2

where quant = min\_quant

order by month ),

Q2 AS

(select month, Max\_quant, MOST\_PROFIT\_DAY, MOST\_PROFIT\_TOTAL\_Q from

(select day as MOST\_PROFIT\_DAY, quant, SUM(QUANT) AS MOST\_PROFIT\_TOTAL\_Q from sales GROUP BY DAY, QUANT ) S1 Natural full join

(select month, max(quant) as Max\_quant from sales group by month ) S2

where quant = Max\_quant

order by month),

Q3 AS

(select distinct(month) from sales)

select month, Min\_quant, LEAST\_PROFIT\_DAY , LEAST\_PROFIT\_TOTAL\_Q, Max\_quant, MOST\_PROFIT\_DAY , MOST\_PROFIT\_TOTAL\_Q

from Q1 Natural full join Q2 Natural full join Q3

**Solution 4-**

Select PROD, MIN\_MONTH, min\_no , MAX\_MONTH, max\_no

FROM

(SELECT PROD, MIN\_MONTH, min\_no

FROM

(select prod, month MIN\_MONTH, sum(quant) as sum\_prod from sales group by prod, month ) T1

Natural full join

(select prod, min(sum\_prod) as min\_no from

( select prod, month, sum(quant) as sum\_prod from sales group by prod, month ) A

group by prod) T2

WHERE sum\_prod = min\_no ) S1

Natural full join

( SELECT PROD, MAX\_MONTH, max\_no

FROM

(select prod, month MAX\_MONTH, sum(quant) as sum\_prod from sales group by prod, month ) T1

Natural full join

(select prod, max(sum\_prod) as max\_no from

( select prod, month, sum(quant) as sum\_prod from sales group by prod, month ) A

group by prod) T2

WHERE sum\_prod = max\_no ) S2

ORDER BY PROD

**Solution 5-**

SELECT cust, prod, NJ\_MAX, NJ\_DT, NY\_MAX, NY\_DT, CT\_MAX, CT\_DT

FROM

(select cust, prod, NJ\_MAX, concat(month,'/',day,'/',year) as NJ\_DT

FROM SALES t1 Natural full join

(Select cust, prod, MAX(quant) as NJ\_MAX from sales where state = 'NJ' group by cust, prod) t2

where quant = NJ\_MAX) S1

Natural full join

(select cust, prod, NY\_MAX, concat(month,'/',day,'/',year) as NY\_DT

FROM SALES t1 Natural full join

(Select cust, prod, MAX(quant) as NY\_MAX from sales where state = 'NY' group by cust, prod) t2

where quant = NY\_MAX) S2

Natural full join

(select cust, prod, CT\_MAX, concat(month,'/',day,'/',year) as CT\_DT

FROM SALES t1 Natural full join

(Select cust, prod, MAX(quant) as CT\_MAX from sales where state = 'CT' group by cust, prod) t2

where quant = CT\_MAX) S3

ORDER BY CUST,PROD

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**NEW\_Solution 1 :**

WITH BASE AS

(SELECT CUST, MAX(QUANT) MAX\_Q, MIN(QUANT) MIN\_Q, ROUND(AVG(QUANT),0) AVERAGE

FROM SALES

GROUP BY CUST),

MAX\_QUANT AS

(SELECT a.CUST, MAX\_Q, PROD AS MAX\_PROD, CONCAT(b.month,'/',b.day,'/',b.year) AS MAX\_DT, STATE AS MAX\_ST, AVERAGE

FROM BASE a, SALES b

WHERE MAX\_Q = QUANT

),

MIN\_QUANT AS

(SELECT a.CUST, MIN\_Q, PROD AS MIN\_PROD, CONCAT(b.month,'/',b.day,'/',b.year) AS MIN\_DT, STATE AS MIN\_ST

FROM BASE a, SALES b

WHERE MIN\_Q = QUANT

)

SELECT a.CUST, MIN\_Q, MIN\_PROD, MIN\_DT, MIN\_ST, MAX\_Q, MAX\_PROD, MAX\_DT, MAX\_ST, AVERAGE

FROM MAX\_QUANT a, MIN\_QUANT b

where a.CUST = b.CUST

**NEW\_Solution 2 :**

WITH JAN\_MINI AS

(

select cust, prod, min(quant) jan\_min

from sales

where month = 01

group by cust, prod

),

JAN AS

(

SELECT a.cust, b.prod, jan\_min, CONCAT(b.month,'/',b.day,'/',b.year) AS JAN\_DT

FROM JAN\_MINI a, sales b

WHERE a.cust=b.cust

and a.prod=b.prod

and a.jan\_min=b.quant

),

FEB\_MAXI AS

(

select cust, prod, max(quant) feb\_max

from sales

where month = 02

group by cust, prod

),

FEB AS

(

SELECT a.cust, b.prod, feb\_max, CONCAT(b.month,'/',b.day,'/',b.year) AS FEB\_DT

FROM FEB\_MAXI a, sales b

WHERE a.cust=b.cust

and a.prod=b.prod

and a.feb\_max=b.quant

),

MAR\_MAXI AS

(

select cust, prod, max(quant) mar\_max

from sales

where month = 03

group by cust, prod

),

MAR AS

(

SELECT a.cust, b.prod, mar\_max, CONCAT(b.month,'/',b.day,'/',b.year) AS MAR\_DT

FROM MAR\_MAXI a, sales b

WHERE a.cust=b.cust

and a.prod=b.prod

and a.mar\_max=b.quant

)

SELECT \* FROM

( Select JAN\_MINI.cust, JAN\_MINI.prod, JAN\_MINI.jan\_min, JAN\_DT

from JAN\_MINI, JAN

WHERE JAN\_MINI.cust = JAN.cust

AND JAN\_MINI.prod = JAN.prod) T1

NATURAL INNER JOIN

( Select FEB\_MAXI.cust, FEB\_MAXI.prod, FEB\_MAXI.feb\_max, FEB\_DT

from FEB\_MAXI, FEB

WHERE FEB\_MAXI.cust = FEB.cust

AND FEB\_MAXI.prod = FEB.prod) T2

NATURAL INNER JOIN

( Select MAR\_MAXI.cust, MAR\_MAXI.prod, MAR\_MAXI.mar\_max, MAR\_DT

from MAR\_MAXI, MAR

WHERE MAR\_MAXI.cust = MAR.cust

AND MAR\_MAXI.prod = MAR.prod) T3

ORDER BY CUST, PROD

**NEW\_Solution 3 :**

WITH BASE AS

(SELECT MONTH, PROD, SUM(QUANT) TOTAL\_Q

FROM SALES

GROUP BY MONTH, PROD),

MAXI\_MINI AS

(SELECT MONTH, max(TOTAL\_Q) MAX\_Q, min(TOTAL\_Q) MIN\_Q

FROM BASE

GROUP BY MONTH),

PROD\_MAX AS

(SELECT a.MONTH, b.PROD, MAX\_Q, MIN\_Q

FROM MAXI\_MINI a, BASE b

WHERE a.MONTH = b.MONTH

AND MAX\_Q = TOTAL\_Q ),

PROD\_MIN AS

(SELECT a.MONTH, b.PROD, MIN\_Q

FROM MAXI\_MINI a, BASE b

WHERE a.MONTH = b.MONTH

AND MIN\_Q = TOTAL\_Q )

SELECT a.MONTH, a.PROD AS MOST\_POPULAR\_PROD, a.MAX\_Q AS MOST\_POP\_TOTAL\_Q, b.PROD AS LEAST\_POPULAR\_PROD, a.MIN\_Q AS LEAST\_POP\_TOTAL\_Q

from PROD\_MAX a, BASE b

where a.MONTH = b.MONTH and a.MIN\_Q = b.TOTAL\_Q

ORDER BY MONTH

**NEW\_Solution 4 :**

WITH BASE AS

(SELECT MONTH, PROD, SUM(QUANT) TOTAL\_Q

FROM SALES

GROUP BY MONTH, PROD),

MON\_MAXI\_MINI AS

(SELECT PROD, max(TOTAL\_Q) MAX\_Q, min(TOTAL\_Q) MIN\_Q

FROM BASE

GROUP BY PROD ),

MON\_MAX AS

(SELECT a.PROD, b.MONTH, a.MAX\_Q, MIN\_Q

FROM MON\_MAXI\_MINI a, BASE b

WHERE a.PROD=b.PROD

AND a.MAX\_Q = b.TOTAL\_Q

)

SELECT a.PROD, a.MONTH, a.MAX\_Q, b.month, MIN\_Q

FROM MON\_MAX a , BASE b

WHERE a.PROD=b.PROD

AND a.MIN\_Q = b.TOTAL\_Q

ORDER BY PROD

**NEW\_Solution 5 :**

WITH BASE AS

(

SELECT CUST, PROD, CT\_AVG, NJ\_AVG, NY\_AVG, PA\_AVG FROM

(SELECT CUST, PROD, ROUND(AVG(QUANT),0) AS CT\_AVG FROM SALES WHERE STATE = 'CT' GROUP BY CUST, PROD) T1

NATURAL FULL JOIN

(SELECT CUST, PROD, ROUND(AVG(QUANT),0) AS NJ\_AVG FROM SALES WHERE STATE = 'NJ' GROUP BY CUST, PROD) T2

NATURAL FULL JOIN

(SELECT CUST, PROD, ROUND(AVG(QUANT),0) AS NY\_AVG FROM SALES WHERE STATE = 'NY' GROUP BY CUST, PROD) T3

NATURAL FULL JOIN

(SELECT CUST, PROD, ROUND(AVG(QUANT),0) AS PA\_AVG FROM SALES WHERE STATE = 'PA' GROUP BY CUST, PROD) T4

),

AVG\_TOT\_CNT AS

(SELECT CUST, PROD, ROUND(AVG(QUANT),0) AVERAGE, SUM(QUANT) AS TOTAL, COUNT(QUANT) AS COUNT

FROM SALES

GROUP BY CUST, PROD

)

SELECT a.CUST, a.PROD, CT\_AVG, NJ\_AVG, NY\_AVG, PA\_AVG, AVERAGE, TOTAL, COUNT

FROM BASE a, AVG\_TOT\_CNT b

WHERE a.CUST = b.CUST

AND a.PROD = b.PROD

ORDER BY a.CUST, a.PROD