## Case Study Part 3

## Query Formulation

**Base Queries**

**1. BQ1: Location/Sales class summary for job quantity and amount**

Create view BQ1 AS

SELECT l.location\_id, l.location\_name, s.sales\_class\_id,s.sales\_class\_desc,

t.time\_year,t.time\_month, s.base\_price,

SUM(j.quantity\_ordered) AS sum\_quantity\_ordered,

SUM(j.Quantity\_Ordered \* j.Unit\_Price) AS Sum\_Job\_amount

FROM W\_Location\_D l,W\_Sales\_Class\_D s,W\_Time\_D t,W\_Job\_F j

WHERE l.Location\_Id = j.Location\_Id

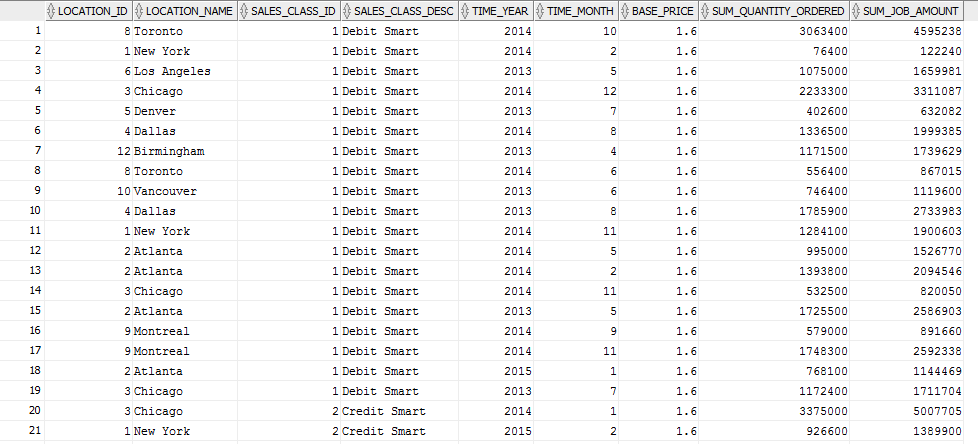
AND s.Sales\_Class\_Id = j.Sales\_Class\_Id

AND t.Time\_Id = j.Contract\_Date

GROUP BY l.location\_id, l.location\_name, s.sales\_class\_id,s.sales\_class\_desc,

t.time\_year,t.time\_month, s.base\_price;

Output



**2. BQ2: Location invoice revenue summary**

Create view BQ2 AS

SELECT j.Job\_id, l.Location\_id, l.Location\_name,j.Unit\_price,j.Quantity\_Ordered,

t.Time\_year,t.Time\_month,

SUM(i.Invoice\_amount) AS sum\_Invoice\_amount,

SUM(i.Invoice\_Quantity ) AS sum\_Invoice\_Quantity

FROM W\_JOB\_F j,W\_Location\_D l,W\_TIME\_D t,W\_INVOICELINE\_F i

WHERE l.Location\_Id = j.Location\_Id

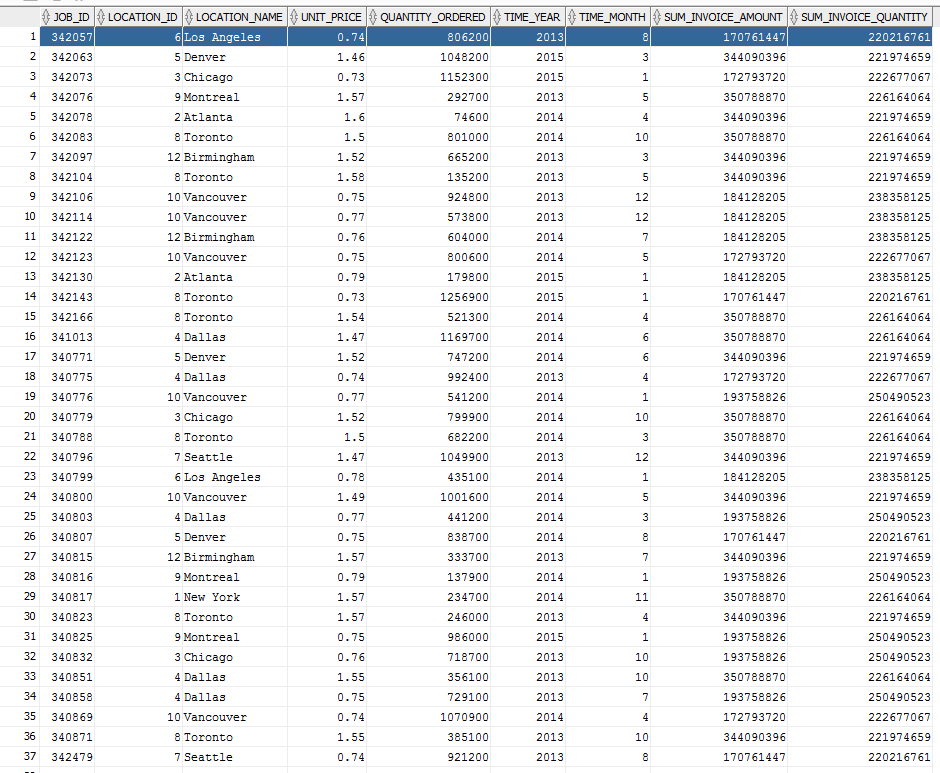
AND t.Time\_Id = j.Contract\_Date

AND i.Sales\_class\_id = j.Sales\_class\_id

GROUP BY j.Job\_id, l.Location\_id, l.Location\_name,j.Unit\_price,j.Quantity\_Ordered,

t.Time\_year,t.Time\_month;

Output:



**3. BQ3: Location subjob cost summary**

Create View BQ3 AS

Select j.job\_id, l.location\_id, l.location\_name, t.time\_year,t.time\_month, sum(sj.cost\_labor) AS labour\_cost,

sum(sj.cost\_material) AS material\_cost, sum(sj.machine\_hours\*m.rate\_per\_hour) machine\_cost, sum(sj.cost\_overhead) AS overhead\_cost,

sum(sj.quantity\_produced) AS quantity\_produced,

sum(sj.cost\_labor) + sum(sj.cost\_material)+ sum(sj.machine\_hours\*m.rate\_per\_hour) + sum(sj.cost\_overhead) AS Total\_Cost,

(sum(sj.cost\_labor) + sum(sj.cost\_material)+ sum(sj.machine\_hours\*m.rate\_per\_hour) + sum(sj.cost\_overhead))/sum(sj.quantity\_produced) AS Unit\_Cost

FROM W\_Location\_D l,W\_Time\_D t,W\_Job\_F j, W\_Sub\_Job\_F sj, W\_Machine\_Type\_D m

WHERE l.location\_Id = j.location\_Id

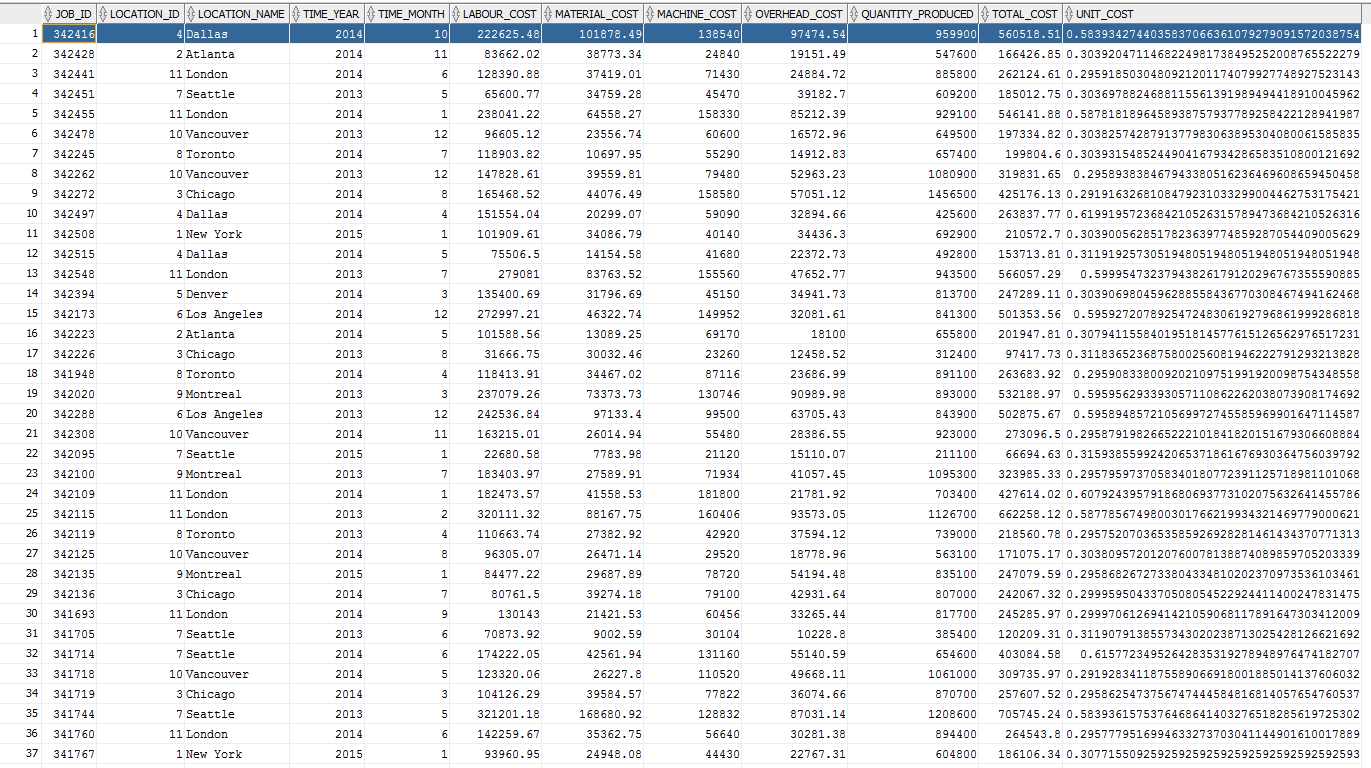
AND j.job\_id = sj.job\_id

AND t.Time\_Id = j.Contract\_Date

AND m.machine\_type\_id= sj.machine\_type\_id

GROUP BY j.job\_id, l.location\_id, l.location\_name, t.time\_year,t.time\_month;

Output:



**4. BQ4: Returns by location and sales class**

CREATE VIEW BQ4 AS

SELECT l.Location\_Id, l.Location\_Name,sc.Sales\_Class\_Id,

sc.Sales\_Class\_Desc,t.Time\_Year,t.Time\_Month,

SUM(i.Quantity\_Shipped - i.Invoice\_Quantity) AS Sum\_Quantity\_Returned,

SUM ((Invoice\_Amount/Invoice\_Quantity)\* (i.Quantity\_Shipped - i.Invoice\_Quantity)) AS Sum\_Amount\_Returns

FROM W\_Location\_D l,W\_SALES\_CLASS\_D sc,W\_TIME\_D t,W\_INVOICELINE\_F i

WHERE l.Location\_Id = i.Location\_Id

AND sc.Sales\_Class\_Id = i.Sales\_Class\_Id

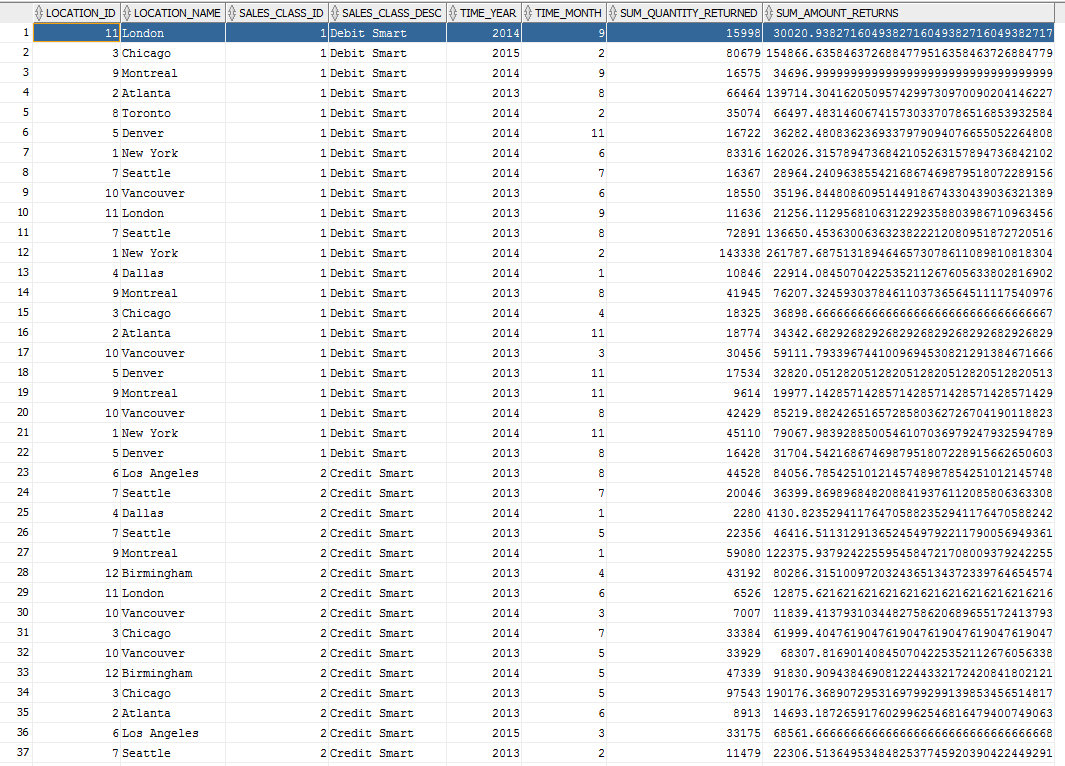
AND t.Time\_Id = i.Invoice\_Sent\_Date

AND (i.Quantity\_Shipped - i.Invoice\_Quantity) > 0

GROUP BY l.Location\_Id, l.Location\_Name,sc.Sales\_Class\_Id,

sc.Sales\_Class\_Desc,t.Time\_Year,t.Time\_Month;

Output:



**5. BQ5: Last shipment delays involving date promised**

CREATE VIEW BQ5 AS

SELECT X1.Job\_Id, l.Location\_Id, l.Location\_Name,sc.Sales\_Class\_Id,

sc.Sales\_Class\_Desc,j.Date\_Promised,X1.Last\_Shipment\_Date, j.Quantity\_Ordered,X1.SumDelayShipQty,

GETBUSDAYSDIFF(X1.Last\_Shipment\_Date,j.Date\_Promised) AS BUS\_DAY\_DIFF

FROM W\_Job\_F j ,W\_Location\_D l,W\_SALES\_CLASS\_D sc,

( SELECT W\_SUB\_JOB\_F.JOB\_ID,

MAX(actual\_ship\_Date) AS Last\_Shipment\_Date,

SUM ( actual\_Quantity ) AS SumDelayShipQty

FROM W\_JOB\_SHIPMENT\_F, W\_SUB\_JOB\_F, W\_Job\_F

WHERE W\_SUB\_JOB\_F.SUB\_JOB\_ID = W\_JOB\_SHIPMENT\_F.SUB\_JOB\_ID

AND W\_Job\_F.Job\_Id = W\_SUB\_JOB\_F.JOB\_ID

AND Actual\_Ship\_Date > Date\_Promised

GROUP BY W\_SUB\_JOB\_F.JOB\_ID

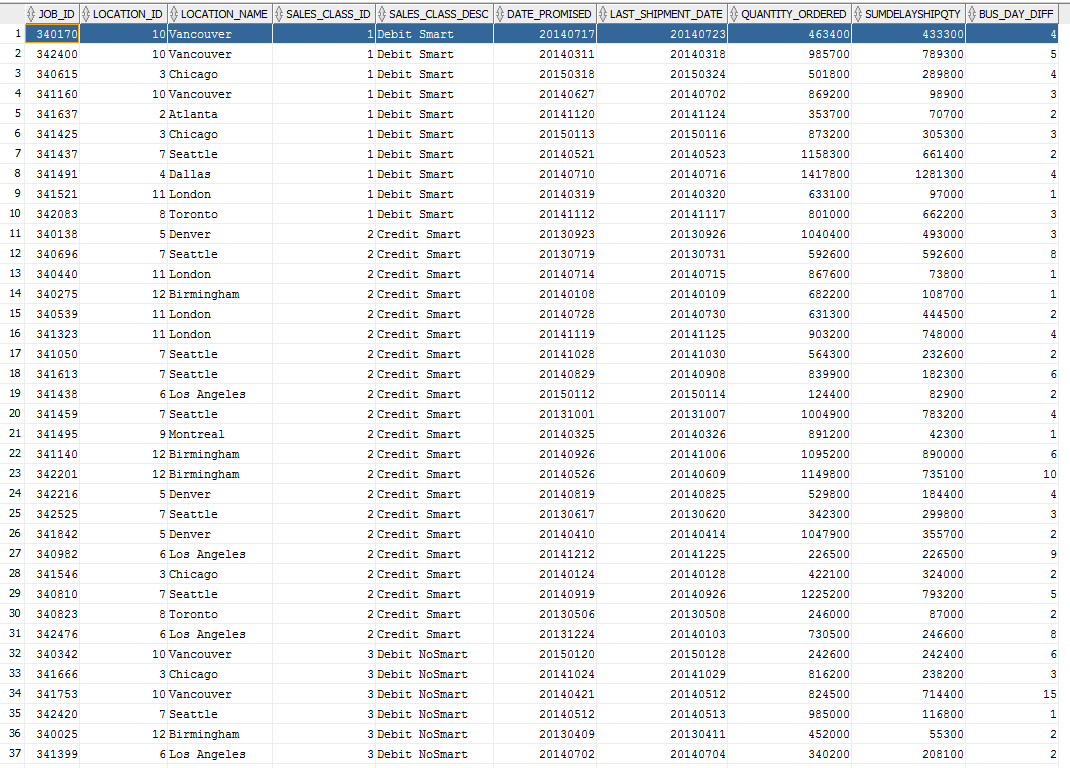
) X1

WHERE l.Location\_Id = j.Location\_Id

AND sc.Sales\_Class\_Id = j.Sales\_Class\_Id

AND X1.Job\_Id = j.Job\_Id;

Output:



**6. BQ6: First shipment delays involving shipped by date**

CREATE VIEW BQ6 AS

SELECT X1.Job\_Id, l.Location\_Id, l.Location\_Name,sc.Sales\_Class\_Id,

sc.Sales\_Class\_Desc,j.Date\_Ship\_By,X1.FirstShipDate,

GETBUSDAYSDIFF(X1.FirstShipDate,j.Date\_Ship\_By) AS BUS\_DAY\_DIFF2

FROM W\_Job\_F j ,W\_Location\_D l,W\_SALES\_CLASS\_D sc,

( SELECT W\_SUB\_JOB\_F.JOB\_ID, MIN(Actual\_Ship\_Date) as FirstShipDate

FROM W\_JOB\_SHIPMENT\_F, W\_SUB\_JOB\_F

WHERE W\_SUB\_JOB\_F.SUB\_JOB\_ID = W\_JOB\_SHIPMENT\_F.SUB\_JOB\_ID

GROUP BY W\_SUB\_JOB\_F.JOB\_ID

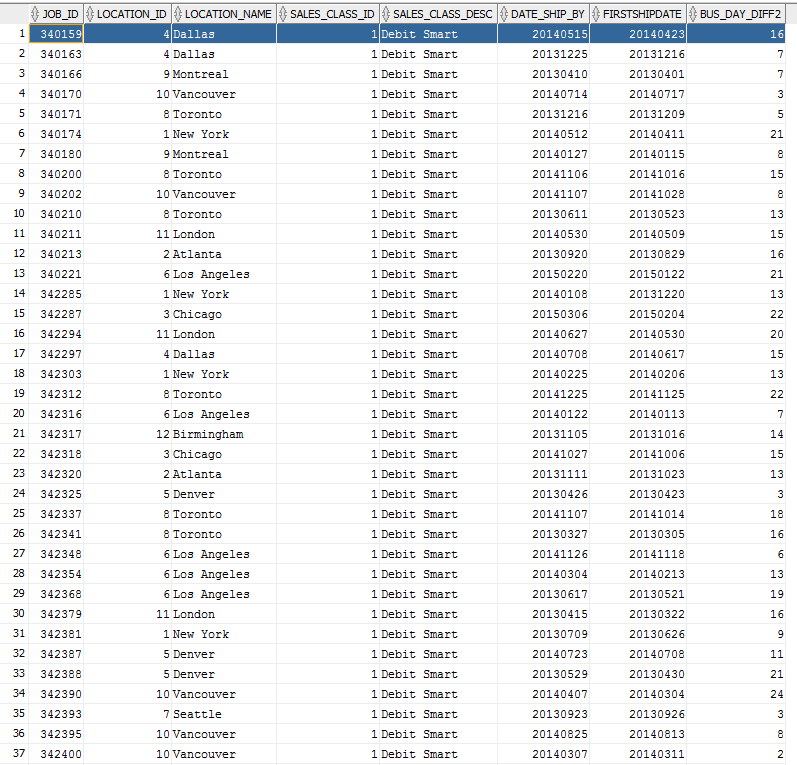
) X1

WHERE l.Location\_Id = j.Location\_Id

AND sc.Sales\_Class\_Id = j.Sales\_Class\_Id

AND X1.Job\_Id = j.Job\_Id;

Output:



**Analytical Queries**

**1. AQ1: Cumulative amount for locations**

SELECT l.location\_name, t.time\_year,t.time\_month,

SUM(j.Quantity\_Ordered \* j.Unit\_Price) AS Sum\_Job\_amount,

SUM(SUM(j.Quantity\_Ordered \* j.Unit\_Price)) OVER

(PARTITION BY l.location\_name, t.time\_year ORDER BY t.time\_month

ROWS UNBOUNDED PRECEDING ) AS Cum\_Sum\_Job\_amount

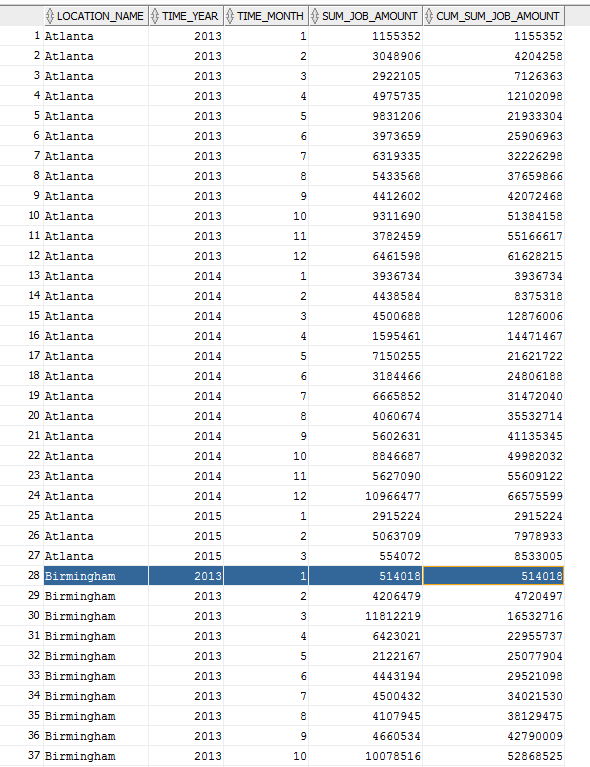
FROM W\_Location\_D l,W\_Time\_D t,W\_Job\_F j

WHERE l.Location\_Id = j.Location\_Id

AND t.Time\_Id = j.Contract\_Date

GROUP BY l.location\_name, t.time\_year,t.time\_month;

Output:



**2. AQ2: Moving average of average amount ordered for locations**

SELECT l.location\_name, t.time\_year,t.time\_month,

SUM(j.Quantity\_Ordered \* j.Unit\_Price)/count(\*) AS AVG\_Job\_amount,

AVG(SUM(j.Quantity\_Ordered \* j.Unit\_Price)/count(\*)) OVER

(PARTITION BY l.location\_name ORDER BY t.time\_year, t.time\_month

ROWS BETWEEN 11 PRECEDING AND 0 FOLLOWING) AS Mvg\_AVG\_Job\_amount

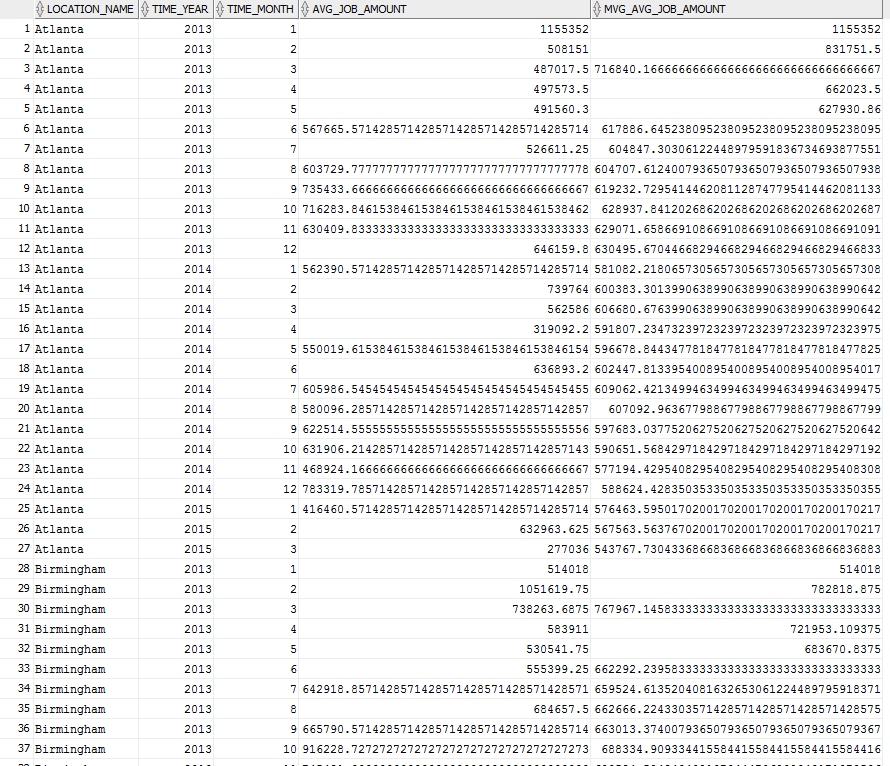
FROM W\_Location\_D l,W\_Time\_D t,W\_Job\_F j

WHERE l.Location\_Id = j.Location\_Id

AND t.Time\_Id = j.Contract\_Date

GROUP BY l.location\_name, t.time\_year,t.time\_month;

Output



**3. AQ3: Rank locations by descending sum of annual profit**

SELECT BQ2.location\_name, BQ2.time\_year,

SUM(BQ2.Sum\_Invoice\_Amount - BQ3.Total\_Cost) AS Sum\_Of\_Profit,

RANK() OVER (

PARTITION BY BQ2.time\_year

ORDER BY SUM(BQ2.Sum\_Invoice\_Amount - BQ3.Total\_Cost)DESC ) AS Rank\_AP

FROM BQ2 , BQ3

WHERE BQ2.Job\_Id = BQ3.Job\_Id

GROUP BY BQ2.location\_name, BQ2.time\_year;

Output



**4. AQ4: Rank locations by descending annual profit margin**

SELECT BQ2.location\_name, BQ2.time\_year,

SUM(BQ2.Sum\_Invoice\_Amount - BQ3.Total\_Cost) / SUM(BQ2.Sum\_Invoice\_Amount) AS Profit\_Margin,

RANK() OVER (

PARTITION BY BQ2.time\_year

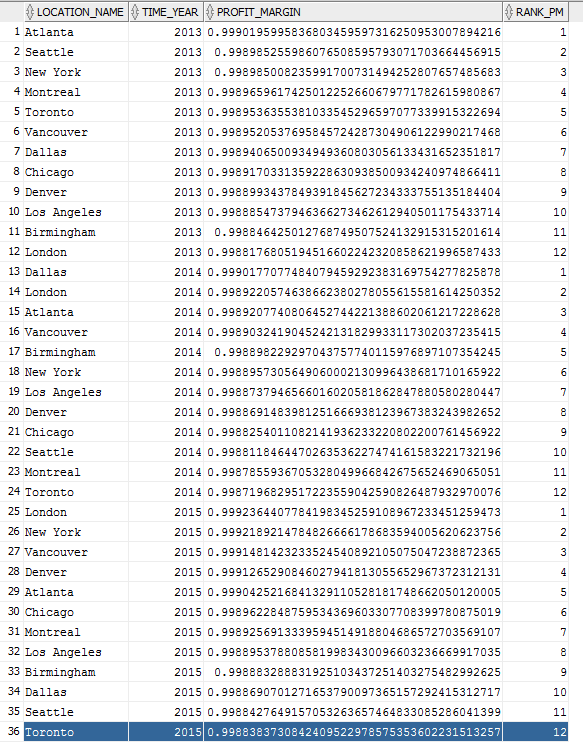
ORDER BY SUM(BQ2.Sum\_Invoice\_Amount - BQ3.Total\_Cost) / SUM(BQ2.Sum\_Invoice\_Amount)DESC ) AS Rank\_PM

FROM BQ2 , BQ3

WHERE BQ2.Job\_Id = BQ3.Job\_Id

GROUP BY BQ2.location\_name, BQ2.time\_year;

**Output**



**5. AQ5: Percent rank of job profit margins for locations**

CREATE VIEW AQ5 AS

SELECT BQ2.Job\_Id, BQ2.location\_name, BQ2.time\_year, BQ2.time\_month,

SUM(BQ2.Sum\_Invoice\_Amount - BQ3.Total\_Cost) / SUM(BQ2.Sum\_Invoice\_Amount) AS Profit\_Margin,

PERCENT\_RANK() OVER (

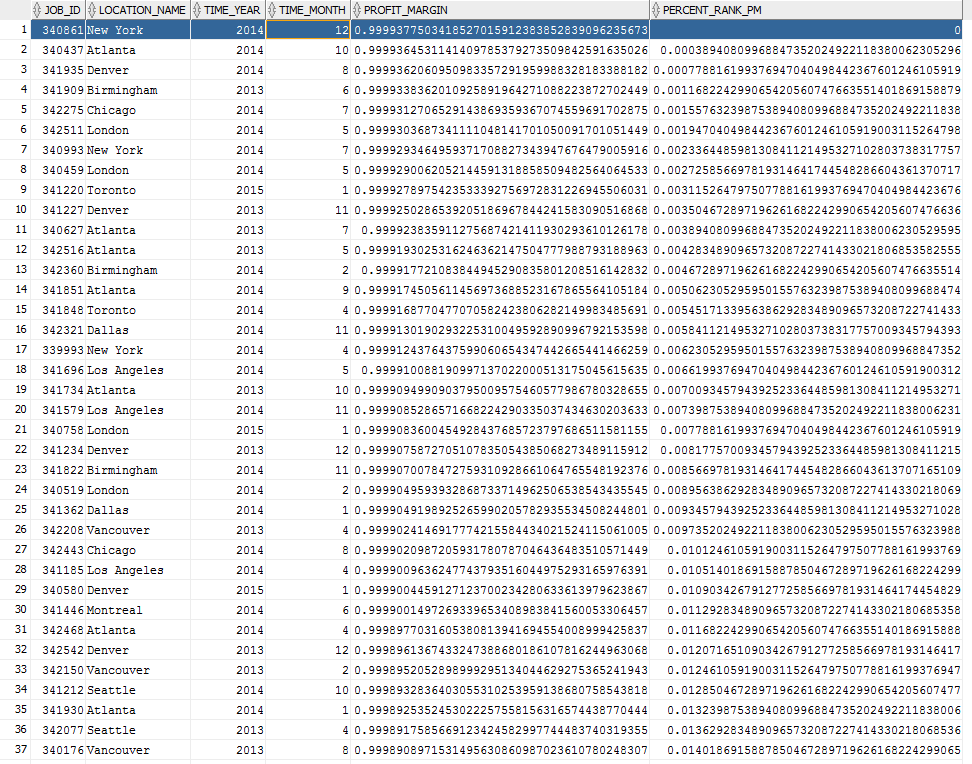
ORDER BY SUM(BQ2.Sum\_Invoice\_Amount - BQ3.Total\_Cost) / SUM(BQ2.Sum\_Invoice\_Amount)DESC ) AS Percent\_Rank\_PM

FROM BQ2 , BQ3

WHERE BQ2.Job\_Id = BQ3.Job\_Id

GROUP BY BQ2.Job\_Id, BQ2.location\_name, BQ2.time\_year, BQ2.time\_month;

**Output**



**6. AQ6: Top performers of percent rank of job profit margins for locations**

SELECT Job\_Id, location\_name, time\_year,time\_month,Profit\_Margin,Cum\_Rank\_PM

FROM (

SELECT Job\_Id, location\_name, time\_year,time\_month, Profit\_Margin,

CUME\_DIST() OVER (

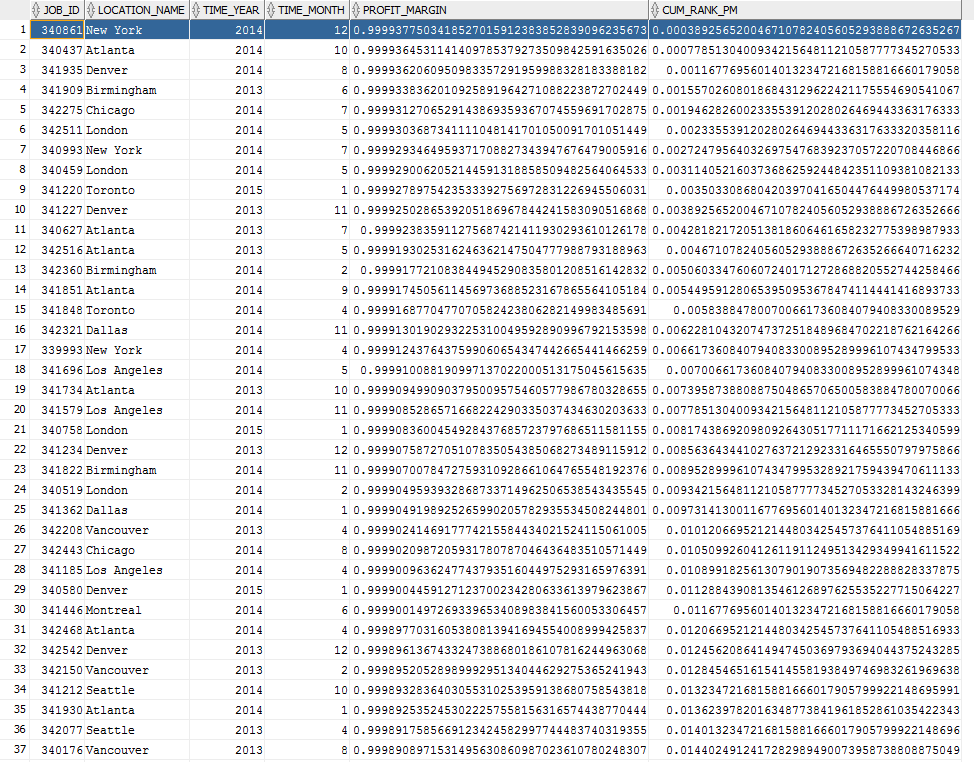
ORDER BY Profit\_Margin DESC ) AS Cum\_Rank\_PM

FROM AQ5

)

WHERE Cum\_Rank\_PM <= .05;

Output



**7. AQ7: Rank sales class by return quantities for each year**

SELECT sc.Sales\_Class\_Desc,t.Time\_Year,

SUM(i.Quantity\_Shipped - i.Invoice\_Quantity) AS Sum\_Quantity\_Returned,

RANK() OVER (

PARTITION BY t.Time\_Year

ORDER BY SUM(i.Quantity\_Shipped - i.Invoice\_Quantity) DESC ) AS Rank\_QR

FROM W\_SALES\_CLASS\_D sc,W\_TIME\_D t,W\_INVOICELINE\_F i

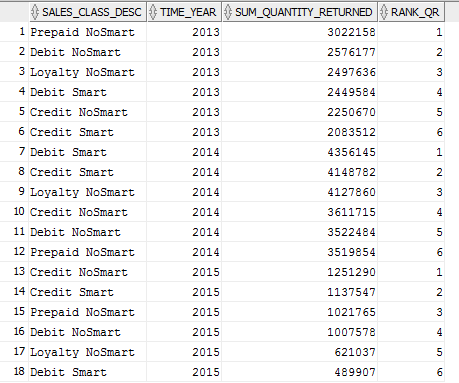
WHERE sc.Sales\_Class\_Id = i.Sales\_Class\_Id

AND t.Time\_Id = i.Invoice\_Sent\_Date

AND (i.Quantity\_Shipped - i.Invoice\_Quantity) > 0

GROUP BY sc.Sales\_Class\_Desc,t.Time\_Year;

**Output**



**8. AQ8: Ratio to report of return quantities for sales classes by year**

SELECT sc.Sales\_Class\_Desc,t.Time\_Year,

SUM(i.Quantity\_Shipped - i.Invoice\_Quantity) AS Sum\_Quantity\_Returned,

RATIO\_TO\_REPORT (SUM(i.Quantity\_Shipped - i.Invoice\_Quantity))

OVER (PARTITION BY t.Time\_Year) AS Ratio\_Quantity\_Returned

FROM W\_SALES\_CLASS\_D sc,W\_TIME\_D t,W\_INVOICELINE\_F i

WHERE sc.Sales\_Class\_Id = i.Sales\_Class\_Id

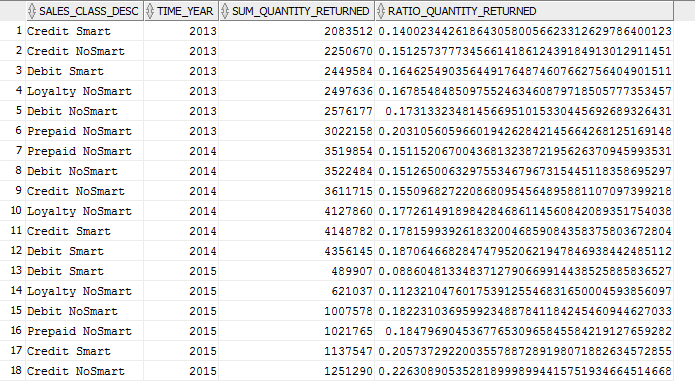
AND t.Time\_Id = i.Invoice\_Sent\_Date

AND (i.Quantity\_Shipped - i.Invoice\_Quantity) > 0

GROUP BY sc.Sales\_Class\_Desc,t.Time\_Year

ORDER BY t.Time\_Year,Sum\_Quantity\_Returned;

Output



**9. AQ9: Rank locations by sum of business days delayed for the job shipped by date**

SELECT BQ6.Location\_Name,t.Time\_Year,

SUM(Bus\_Day\_Diff2) AS Sum\_Bus\_Day\_Diff2,

RANK() OVER (

PARTITION BY t.Time\_Year

ORDER BY SUM(Bus\_Day\_Diff2)DESC ) AS Rank\_AP,

DENSE\_RANK() OVER (

PARTITION BY t.Time\_Year

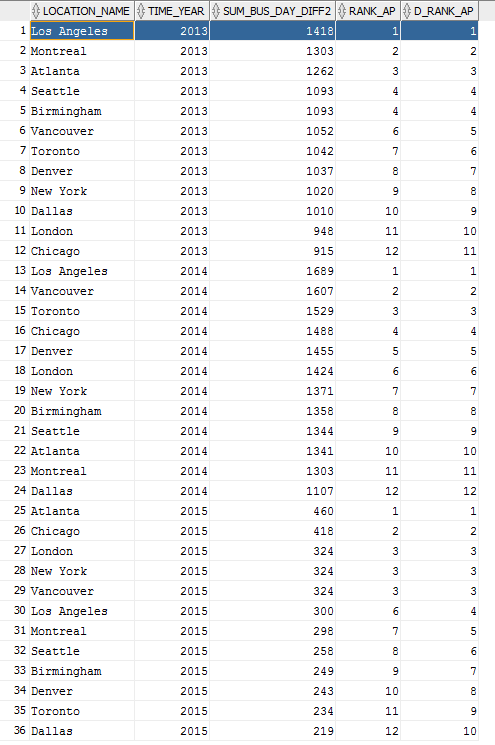
ORDER BY SUM(Bus\_Day\_Diff2)DESC ) AS D\_Rank\_AP

FROM BQ6,W\_Time\_D t

WHERE t.Time\_Id = BQ6.Date\_Ship\_By

GROUP BY BQ6.Location\_Name,t.Time\_Year;

Output



**10. AQ10: Rank locations by delay rate for jobs delayed on the last shipment date**

SELECT BQ5.Location\_Name,t.Time\_Year,count(\*) AS Count\_Delay\_Job,

SUM(Bus\_Day\_Diff) AS Sum\_Bus\_Day\_Diff,

RANK() OVER (

PARTITION BY t.Time\_Year

ORDER BY SUM(BQ5.Quantity\_Ordered - SumDelayShipQty) / SUM(Quantity\_Ordered) DESC ) AS Delay\_Rate

FROM BQ5,W\_Time\_D t

WHERE t.Time\_Id = BQ5.Date\_Promised

GROUP BY BQ5.Location\_Name,t.Time\_Year;

Output

