Assignment 2 Jamia Russell

LINK TO PANOPTO VIDEO:

https://northwestern.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=9de498a6-1ace-4eb4-b061-b15100252aec

1. List the total sales by region and customer. Your output should be sorted by region name and customer code.

Code:

```
SELECT      dwcustomer.cus_code,

            dwregion.reg_name,

            SUM(dwdaysalesfact.sale_price*dwdaysalesfact.sale_units) as
            total_sale

            FROM dwcustomer

            JOIN dwregion ON dwregion.reg_id = dwcustomer.reg_id

            JOIN dwdaysalesfact ON dwdaysalesfact.cus_code =
            dwcustomer.cus_code

            GROUP BY dwregion.reg_name, dwcustomer.cus_code

            ORDER BY   dwregion.reg_name, dwcustomer.cus_code ASC;
```

SQL Output:

	cus_code integer	reg_name character varying (10)	total_sale numeric
1	10012	NE	287.91
2	10013	NE	64.32
3	10014	NW	494.71
4	10019	NW	39.95
5	10010	SE	180.26
6	10011	SE	130.89
7	10015	SE	325.82
8	10016	SE	179.22
9	10017	SW	419.66
10	10018	SW	129.32

2. Repeat #1 but produce the output using ROLLUP with region name and customer code.

Code:

```
SELECT      dwcustomer.cus_code,

            dwregion.reg_name,

            SUM(dwdaysalesfact.sale_price*dwdaysalesfact.sale_units) as
            total_sale

            FROM dwcustomer

            JOIN dwregion ON dwregion.reg_id = dwcustomer.reg_id

            JOIN dwdaysalesfact ON dwdaysalesfact.cus_code =
            dwcustomer.cus_code

            GROUP BY ROLLUP (dwregion.reg_name, dwcustomer.cus_code)

            ORDER BY dwregion.reg_name, dwcustomer.cus_code ASC;
```

SQL Output:

	cus_code integer	reg_name character varying (10)	total_sale numeric
1	10012	NE	287.91
2	10013	NE	64.32
3	[null]	NE	352.23
4	10014	NW	494.71
5	10019	NW	39.95
6	[null]	NW	534.66
7	10010	SE	180.26
8	10011	SE	130.89
9	10015	SE	325.82
10	10016	SE	179.22
11	[null]	SE	816.19
12	10017	SW	419.66
13	10018	SW	129.32
14	[null]	SW	548.98
15	[null]	[null]	2252.06

3. Repeat #1 but product the output using CUBE with region name and customer code. a) Explain the additional information/intelligence gained when using ROLLUP or CUBE, b) Use the output from questions 1, 2 and 3 to explain what the data reveals.

Code:

```
SELECT      dwcustomer.cus_code,

            dwregion.reg_name,

            SUM(dwdaysalesfact.sale_price*dwdaysalesfact.sale_units) as
            total_sale

            FROM dwcustomer

            JOIN dwregion ON dwregion.reg_id = dwcustomer.reg_id

            JOIN dwdaysalesfact ON dwdaysalesfact.cus_code =
            dwcustomer.cus_code

            GROUP BY CUBE (dwregion.reg_name, dwcustomer.cus_code)

            ORDER BY dwregion.reg_name, dwcustomer.cus_code ASC;
```

SQL Output:

	cus_code integer	reg_name character varying (10)	total_sale numeric
1	10012	NE	287.91
2	10013	NE	64.32
3	[null]	NE	352.23
4	10014	NW	494.71
5	10019	NW	39.95
6	[null]	NW	534.66
7	10010	SE	180.26
8	10011	SE	130.89
9	10015	SE	325.82
10	10016	SE	179.22
11	[null]	SE	816.19
12	10017	SW	419.66
13	10018	SW	129.32
14	[null]	SW	548.98
15	10010	[null]	180.26
16	10011	[null]	130.89
17	10012	[null]	287.91
18	10013	[null]	64.32
19	10014	[null]	494.71
20	10015	[null]	325.82
21	10016	[null]	179.22
22	10017	[null]	419.66
23	10018	[null]	129.32
24	10019	[null]	39.95
25	[null]	[null]	2252.06

a) ROLLUP and CUBE are sub-clauses of the GROUP BY clause. They produce summary reports. ROLLUP produces aggregated results for a hierarchy of values in the selected columns. CUBE produces a result that contains all possible combinations of values for the selected columns.

b) The data outputs show us the power of CUBE. Generating all possible combinations of region and customer to provide total sales. The data output is more comprehensive.

4. List the total sales by customer code, month, and product code. Sort by customer code and month.

Code:

```
SELECT     dwdaysalesfact.cus_code,
```

```
dwdaysalesfact.p_code,

dwtime.tm_month,

SUM(dwdaysalesfact.sale_price*dwdaysalesfact.sale_units) as
total_sale

FROM dwdaysalesfact

JOIN dwtime ON dwtime.tm_id = dwdaysalesfact.tm_id

GROUP BY dwdaysalesfact.cus_code,dwdaysalesfact.p_code,
dwtime.tm_month

ORDER BY dwdaysalesfact.cus_code, dwtime.tm_month ASC;
```

SQL Output:

	cus_code integer	p_code character varying (10)	tm_month integer	total_sale numeric
1	10010	13-Q2/P2	10	74.95
2	10010	23109-HB	10	19.90
3	10010	54778-2T	10	14.97
4	10010	PVC23DRT	10	70.44
5	10011	2232/QTY	10	109.92
6	10011	SM-18277	10	20.97
7	10012	SM-18277	9	20.97
8	10012	23109-HB	10	9.95
9	10012	89-WRE-Q	10	256.99
10	10013	13-Q2/P2	10	29.98
11	10013	54778-2T	10	4.99
12	10013	PVC23DRT	10	29.35
13	10014	13-Q2/P2	9	14.99
14	10014	2232/QTY	9	109.92
15	10014	23109-HB	9	9.95
16	10014	WR3/TT3	10	359.85
17	10015	2238/QPD	9	38.95
18	10015	23109-HB	9	9.95
19	10015	54778-2T	9	9.98
20	10015	89-WRE-Q	9	256.99
21	10015	23109-HB	10	9.95
22	10016	13-Q2/P2	9	104.93
23	10016	1546-QQ2	9	39.95
24	10016	54778-2T	9	4.99
25	10016	PVC23DRT	9	29.35
26	10017	13-Q2/P2	9	14.99
27	10017	23109-HB	9	29.85
28	10017	54778-2T	9	14.97
29	10017	WR3/TT3	9	359.85
30	10018	2238/QPD	9	38.95
31	10018	23109-HB	9	9.95
32	10018	54778-2T	9	9.98
33	10018	PVC23DRT	9	70.44
34	10019	1546-QQ2	9	39.95

5. Show all purchases (total sales) in September to show which customer bought the most product in September. Show customer code, customer name and total sales; sort all output by total sales with the highest sales on top.

Code:

```
SELECT dwcustomer.cus_code,
```

```
    dwcustomer.cus_fname,
    dwcustomer.cus_lname,
    dwtime.tm_month,
    SUM (dwdaysalesfact.sale_price*dwdaysalesfact.sale_units) AS
    total_sales
    FROM dwcustomer
  JOIN dwdaysalesfact ON
dwcustomer.cus_code=dwdaysalesfact.cus_code
    JOIN dwtime ON dwdaysalesfact.tm_id=dwtime.tm_id
    WHERE dwtime.tm_month= '09'
    GROUP BY dwcustomer.cus_code, dwtime.tm_month
    ORDER BY total_sales DESC;
```

SQL Output:

	cus_code integer	cus_fname character varying (15)	cus_lname character varying (15)	tm_month integer	total_sales numeric
1	10017	George	Williams	9	419.66
2	10015	Amy	O'Brian	9	315.87
3	10016	James	Brown	9	179.22
4	10014	Myron	Orlando	9	134.86
5	10018	Anne	Farriss	9	129.32
6	10019	Olette	Smith	9	39.95
7	10012	Kathy	Smith	9	20.97

6. List the total sales by month and product category. Your output should be sorted by month and product category.

Code:

```
SELECT
    dwproduct.p_category,
    dwtime.tm_month,
      SUM(dwdaysalesfact.sale_price * dwdaysalesfact.sale_units) AS
      total_sales
      FROM dwproduct
      JOIN dwdaysalesfact ON dwproduct.p_code = dwdaysalesfact.p_code
      JOIN dwtime ON dwdaysalesfact.tm_id = dwtime.tm_id
      GROUP BY dwproduct.p_category,dwtime.tm_month;
```

SQL Output:

	p_category character varying (5)	tm_month integer	total_sales numeric
1	CAT1	9	174.83
2	CAT1	10	124.89
3	CAT2	9	446.81
4	CAT2	10	366.91
5	CAT3	9	537.54
6	CAT3	10	459.64
7	CAT4	9	80.67
8	CAT4	10	60.77

7. List the number of product sales (number of rows) and total sales by month. Your output should be sorted by month and should show one row per month.

Code:

```
SELECT dwtime.tm_month,
       COUNT(sale_units),
       SUM(dwdaysalesfact.sale_price * dwdaysalesfact.sale_units) AS
    total_sales
       FROM dwtime
       JOIN dwdaysalesfact ON dwtime.tm_id = dwdaysalesfact.tm_id
       GROUP BY dwtime.tm_month
       ORDER BY dwtime.tm_month;
```

SQL Output:

	tm_month integer	count bigint	total_sales numeric
1	9	23	1239.85
2	10	13	1012.21

8. Show product category, product code, product description and units sold (sum). Which product is the best seller based on units sold? a) Show units sold for September, b) Show units sold for October.

Code:

```
SELECT
    dwproduct.p_category,
    dwproduct.p_code,
    dwproduct.p_descript,
```

```
SUM(dwdaysalesfact.sale_units) AS total_units

FROM dwproduct

JOIN dwdaysalesfact ON dwproduct.p_code = dwdaysalesfact.p_code

GROUP BY   dwproduct.p_category, dwproduct.p_code,
dwproduct.p_descript

ORDER BY  total_units DESC

LIMIT 1;
```

SQL Output:

	p_category character varying (5)	p_code [PK] character varying (10)	p_descript character varying (35)	total_units bigint
1	CAT3	PVC23DRT	PVC pipe, 3.5-in., 8-ft	34

a)

Code:

```
SELECT dwproduct.p_category,

dwproduct.p_code,

dwproduct.p_descript,

SUM(dwdaysalesfact.sale_units) AS total_units

FROM dwproduct

JOIN dwdaysalesfact ON dwproduct.p_code = dwdaysalesfact.p_code

JOIN dwtime ON dwtime.tm_id=dwdaysalesfact.tm_id

WHERE dwtime.tm_month = '09'

GROUP BY   dwproduct.p_category, dwproduct.p_code,
dwproduct.p_descript

ORDER BY  total_units DESC;
```

SQL Output:

	p_category character varying (5)	p_code [PK] character varying (10)	p_descript character varying (35)	total_units bigint
1	CAT3	PVC23DRT	PVC pipe, 3.5-in., 8-ft	17
2	CAT1	13-Q2/P2	7.25-in. pwr. saw blade	9
3	CAT1	54778-2T	Rat-tail file, 1/8-in. fine	8
4	CAT4	23109-HB	Claw hammer	6
5	CAT4	SM-18277	1.25-in. metal screw, 25	3
6	CAT3	WR3/TT3	Steel matting, 4'x8'x1/6", .5" mesh	3
7	CAT3	2238/QPD	B\&D cordless drill, 1/2-in.	2
8	CAT2	1546-QQ2	Hrd. cloth, 1/4-in., 2x50	2
9	CAT2	89-WRE-Q	Hicut chain saw, 16 in.	1
10	CAT2	2232/QTY	B\&D jigsaw, 12-in. blade	1

b)

Code:

```
SELECT dwproduct.p_category,
dwproduct.p_code,
dwproduct.p_descript,
SUM(dwdaysalesfact.sale_units) AS total_units
FROM dwproduct
JOIN dwdaysalesfact ON dwproduct.p_code = dwdaysalesfact.p_code
JOIN dwtime ON dwtime.tm_id=dwdaysalesfact.tm_id
WHERE dwtime.tm_month = '10'
GROUP BY   dwproduct.p_category, dwproduct.p_code,
dwproduct.p_descript
ORDER BY  total_units DESC;
```

SQL Output:

	p_category character varying (5)	p_code [PK] character varying (10)	p_descript character varying (35)	total_units bigint
1	CAT3	PVC23DRT	PVC pipe, 3.5-in., 8-ft	17
2	CAT1	13-Q2/P2	7.25-in. pwr. saw blade	7
3	CAT4	23109-HB	Claw hammer	4
4	CAT1	54778-2T	Rat-tail file, 1/8-in. fine	4
5	CAT3	WR3/TT3	Steel matting, 4'x8'x1/6", .5" mesh	3
6	CAT4	SM-18277	1.25-in. metal screw, 25	3
7	CAT2	2232/QTY	B\&D jigsaw, 12-in. blade	1
8	CAT2	89-WRE-Q	Hicut chain saw, 16 in.	1

9.List the number of product sales (number of rows) and total sales by month, product category, and product. Your output should be sorted by month, product category and product.

Code:

```
SELECT
      dwtime.tm_month,
      dwproduct.p_category,
      dwproduct.p_descript,
      COUNT(sale_units),
       SUM(dwdaysalesfact.sale_price * dwdaysalesfact.sale_units) AS
       total_sales
       FROM dwproduct
       JOIN dwdaysalesfact ON dwproduct.p_code = dwdaysalesfact.p_code
       JOIN dwtime ON dwdaysalesfact.tm_id = dwtime.tm_id
       GROUP BY
      dwtime.tm_month,
      dwproduct.p_category,
      dwproduct.p_descript
      ORDER BY
    dwtime.tm_month,
    dwproduct.p_category,
    dwproduct.p_descript ASC;
```

SQL Output:

	tm_month integer	p_category character varying (5)	p_descript character varying (35)	count bigint	total_sales numeric
1	9	CAT1	7.25-in. pwr. saw blade	4	134.91
2	9	CAT1	Rat-tail file, 1/8-in. fine	4	39.92
3	9	CAT2	B\&D jigsaw, 12-in. blade	1	109.92
4	9	CAT2	Hicut chain saw, 16 in.	1	256.99
5	9	CAT2	Hrd. cloth, 1/4-in., 2x50	2	79.90
6	9	CAT3	B\&D cordless drill, 1/2-in.	2	77.90
7	9	CAT3	PVC pipe, 3.5-in., 8-ft	2	99.79
8	9	CAT3	Steel matting, 4'x8'x1/6", .5" mesh	1	359.85
9	9	CAT4	1.25-in. metal screw, 25	1	20.97
10	9	CAT4	Claw hammer	5	59.70
11	10	CAT1	7.25-in. pwr. saw blade	2	104.93
12	10	CAT1	Rat-tail file, 1/8-in. fine	2	19.96
13	10	CAT2	B\&D jigsaw, 12-in. blade	1	109.92
14	10	CAT2	Hicut chain saw, 16 in.	1	256.99
15	10	CAT3	PVC pipe, 3.5-in., 8-ft	2	99.79
16	10	CAT3	Steel matting, 4'x8'x1/6", .5" mesh	1	359.85
17	10	CAT4	1.25-in. metal screw, 25	1	20.97
18	10	CAT4	Claw hammer	3	39.80

10. List the top 5 vendors based on the total sales of their products. Show both the vendors' names and the total sales of their product. Sort by total sales.

Code:

```
SELECT

    dwvendor.v_name,

    SUM(dwdaysalesfact.sale_units * dwdaysalesfact.sale_price) AS
total_sales

   FROM dwvendor

  JOIN dwproduct ON dwproduct.v_code = dwvendor.v_code

  JOIN  dwdaysalesfact ON dwdaysalesfact.p_code = dwproduct.p_code

  GROUP BY dwvendor.v_name

  ORDER BY   total_sales DESC

   LIMIT 5;
```

SQL Output:

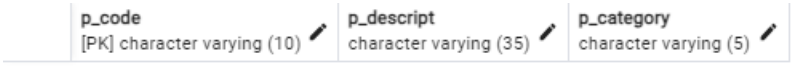
	v_name character varying (35)	total_sales numeric
1	Rubicon Systems	797.60
2	ORDVA, Inc.	733.82
3	Bryson, Inc.	341.02
4	Gomez Bros.	299.72
5	Randsets Ltd.	79.90

11. List the products that have not been sold in the year 2015. Show the product code, the product description, and the product category.

Code:

```
SELECT
    dwproduct.p_code,
    dwproduct.p_descript,
    dwproduct.p_category
FROM dwproduct
JOIN dwdaysalesfact ON dwproduct.p_code = dwdaysalesfact.p_code
LEFT JOIN dwtime on dwdaysalesfact.tm_id=dwdaysalesfact.tm_id
WHERE dwtime.tm_year <> 2015
```

SQL Output:



	p_code [PK] character varying (10)	p_descript character varying (35)	p_category character varying (5)

12. Find the top-selling products in each region based on the number of units sold. Show the region names, product description and total units sold. Order by region name and total units sold (from largest to smallest).

Code:

```
SELECT
        dwregion.reg_name,
        dwproduct.p_descript,
        SUM(dwdaysalesfact.sale_units) AS total_units
       FROM dwregion
       JOIN dwcustomer ON dwcustomer.reg_id = dwregion.reg_id
       JOIN dwdaysalesfact ON dwdaysalesfact.cus_code =
       dwcustomer.cus_code
       JOIN dwproduct ON dwproduct.p_code = dwdaysalesfact.p_code
       GROUP BY dwregion.reg_name, dwproduct.p_descript
       ORDER BY dwregion.reg_name, total_units DESC;
```

SQL Output:

	reg_name character varying (10)	p_descript character varying (35)	total_units bigint
1	NE	PVC pipe, 3.5-in., 8-ft	5
2	NE	1.25-in. metal screw, 25	3
3	NE	7.25-in. pwr. saw blade	2
4	NE	Hicut chain saw, 16 in.	1
5	NE	Claw hammer	1
6	NE	Rat-tail file, 1/8-in. fine	1
7	NW	Steel matting, 4'x8'x1/6", .5" mesh	3
8	NW	Claw hammer	1
9	NW	7.25-in. pwr. saw blade	1
10	NW	B\&D jigsaw, 12-in. blade	1
11	NW	Hrd. cloth, 1/4-in., 2x50	1
12	SE	PVC pipe, 3.5-in., 8-ft	17
13	SE	7.25-in. pwr. saw blade	12
14	SE	Rat-tail file, 1/8-in. fine	6
15	SE	Claw hammer	4
16	SE	1.25-in. metal screw, 25	3
17	SE	B\&D cordless drill, 1/2-in.	1
18	SE	B\&D jigsaw, 12-in. blade	1
19	SE	Hicut chain saw, 16 in.	1
20	SE	Hrd. cloth, 1/4-in., 2x50	1
21	SW	PVC pipe, 3.5-in., 8-ft	12
22	SW	Rat-tail file, 1/8-in. fine	5
23	SW	Claw hammer	4
24	SW	Steel matting, 4'x8'x1/6", .5" mesh	3
25	SW	7.25-in. pwr. saw blade	1
26	SW	B\&D cordless drill, 1/2-in.	1