

RDB&SQL Session -7 (Advanced Grouping Operations)

SQL Session-7 (Advanced Grouping Operations)

Training Clarusway

Pear Deck - January 21, 2023 at 10:54AM

Part 1 - Summary

Use this space to summarize your thoughts on the lesson

Part 2 - Responses

Slide 1



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Advanced Grouping Operations



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Your Response

I've completed the pre-class content?

True **False**

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Students choose an option

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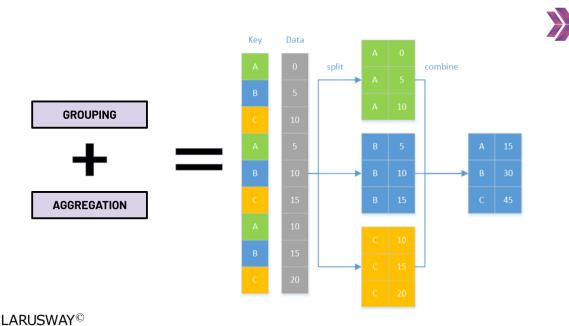
- ▶ Grouping
- ▶ Having Clause
- ▶ Grouping Sets
- ▶ Pivot

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1 Having Clause

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▶ Introduction



- The GROUP BY clause groups rows into summary rows or groups.
- The HAVING clause filters groups on a specified condition.
- You have to use the HAVING clause with the GROUP BY.
- Otherwise, you will get an error.



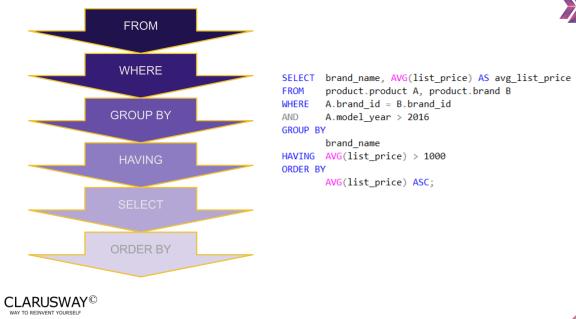
Syntax

```
1 SELECT column_1, aggregate_function(column_2)
2 FROM table_name
3 GROUP BY column_1
4 HAVING search_condition;
```



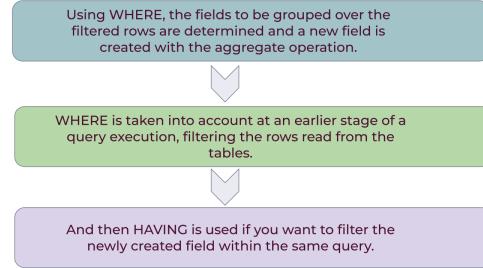
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Query Time

Write a query that checks if any product id is duplicated in product table.

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Query Time

Write a query that returns category ids with conditions max list price above 4000 or a min list price below 500.

Expected Output:

#	category_id	max_price	min_price
1	1	16999.95	3.00
2	4	3999.99	1.00
3	5	7999.99	59.99
4	6	359.99	29.99
5	7	2499.00	81.99
6	8	499.95	499.95
7	9	78.99	55.95
8	10	349.95	232.99
9	11	799.98	33.99
10	13	2199.99	40.99
11	14	349.99	39.99
12	15	119.66	75.99
13	16	2399.98	234.99

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Query Time For You

Find the average product prices of the brands. Display brand name and average prices in descending order.

Expected Output:

	brand_name	avg_list_price
1	SunBriteTV	2186.611250
2	Marantz	1527.851428
3	lg	1253.820000
4	Samsung	1047.642195
5	svs	933.315000
6	Dell	803.303750
7	BenQ	646.333333
8	Asus	641.450000
9	Sony	583.450000
10	Sennheiser	580.310000
11	Asus	534.462142
12	Apple	527.851875

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Query Time For You

Write a query that returns the list of brands whose average product prices are more than 1000

Expected Output:

	brand_name	avg_list_price
1	Samsung	1047.642195
2	lg	1253.820000
3	Marantz	1527.851428
4	SunBriteTV	2186.611250

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Query Time For You



Write a query that returns the list of each order id and that order's total net price (please take into consideration of discounts and quantities)

Expected Output:

	order_id	net_price
1	1	1978.1464
2	2	1370.5907
3	3	806.5405
4	4	246.5820
5	5	529.0224
6	6	2539.2541
7	7	623.9127
8	8	487.7719
9	9	107.9820
10	10	224.9910
11	11	1096.5725
12	12	302.0725

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Query Time



Question: Write a query that returns monthly order counts of the States.

Expected Output:

	state	YEARS	months	NUM_OF_ORDERS
1	AK	2018	1	3
2	AK	2018	2	2
3	AK	2018	6	1
4	AK	2018	7	1
5	AK	2018	8	1
6	AK	2018	9	2
7	AK	2018	10	1
8	AK	2018	11	1
9	AK	2018	12	1

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▶ Introduction

- The GROUP BY operator groups all specified fields together for the aggregate operation.
- However, using GROUPING SETS, individual grouping can be done for each of the fields in the parentheses.



Syntax

```
1 SELECT
2   column1,
3   column2,
4   aggregate_function (column3)
5 FROM
6   table_name
7 GROUP BY
8   GROUPING SETS (
9     (column1, column2),
10    (column1),
11    (column2),
12   ()
13 );
```

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In order to reach meaningful summary statistics you can use GROUPING SETS:

- When you cannot decide which field to use,
- When you want to see the results of different grouping combinations



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▶ Example

```
-- GROUP BY  
GROUPING SETS  
(  
    (Product),  
    (Product, Size)  
)
```



Product	Size	Sum_Sales
Jean	Null	81
Jean	Small	13
Jean	Medium	55
Jean	Large	13
T-Shirt	Null	66
T-Shirt	Small	30
T-Shirt	Medium	20
T-Shirt	Large	16
Jacket	Null	28
Jacket	Small	11
Jacket	Medium	13
Jacket	Large	4



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Query Time

Summary Table:

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3 Pivot



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▶ Introduction



The PIVOT operator converts the unique observations seen in the results table into fields and specifies the corresponding aggregate values as rows.

With the PIVOT operator, **GROUP BY** is not used. The logic setup of both operators is completely different.



You follow these steps to make a query a pivot table:

1. First, select a base dataset for pivoting.
2. Second, create a temporary result by using a derived table or common table expression (CTE)
3. Third, apply the PIVOT operator.

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▶ Example



Product	Sum_Sales
Rose	53
T-Shirt	81
Cup	15
Teddy Bear	7
Book	28



Rose	T-Shirt	Cup	Teddy Bear	Book
53	81	15	7	28

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► Example



Brand	Year	Sum_Sales
Audi	2019	100
Ford	2019	200
Renault	2019	150
Audi	2020	120
Ford	2020	180
Renault	2020	170
Audi	2021	130
Ford	2021	250
Renault	2021	270



YEAR	Audi	Ford	Renault
2019	150	200	150
2020	120	180	170
2021	130	250	270

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► Syntax



```
1 SELECT [column_name], [pivot_value1], [pivot_value2], ...[pivot_value_n]
2 FROM
3 table_name
4 PIVOT
5 (
6 aggregate_function(aggregate_column)
7 FOR pivot_column
8 IN ([pivot_value1], [pivot_value2], ... [pivot_value_n])
9 ) AS pivot_table_name;
```

In this syntax:

[column_name]
[pivot value]
[aggregate function]
[aggregate column]
[pivot column]

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Query Time For You

Question: Write a query that returns the total turnover from each brand by model year. (in pivot table format)

Expected Output:

	brand_name	2018	2019	2020	2021
1	Acer	1	2	0	2
2	Alpine	2	2	0	2
3	Apple	8	18	20	2
4	Asus	2	8	1	1
5	AudioQuest	5	3	0	2
6	BenQ	0	1	2	0
7	Bose	1	1	4	1
8	Cossor	17	10	5	6
9	Definitive Technology	6	3	2	1
10	Dell	2	1	3	2
11	ENAC	3	0	1	1
12	House Of Marley	1	2	4	1
13	hp	1	1	2	0

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Query Time For You

Question: Write a query that returns count of the orders day by day in a pivot table format that has been shipped two days later.

Expected Output:

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	71	79	82	47	62	61	61

Query executed successfully.

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Your Response

Slide 28

Your Response

Is everything clear so far?

Students choose an option

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Slide 29

Your Response

How well did you like this lesson?

Students, drag the icon!

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THANKS!

Any questions?

You can find me at:

- ▶ @adsum

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