

RDB&SQL Session 1-2 (Fun. of SQL)

SQL Session-2 (Aggregate Functions and Group By)

Training Clarusway

Pear Deck - January 12, 2023 at 8:01PM

Part 1 - Summary

Use this space to summarize your thoughts on the lesson

Part 2 - Responses

Slide 1



Session 1-2

CLARUSWAY®
WAY TO REINVENT YOURSELF

Use this space to take notes:

Slide 2

Your Response

I've completed the pre-class?

True False

Pear Deck Interactive Slide
Do not remove this bar

Students choose an option

Use this space to take notes:

Slide 3

Your Response

I've installed and started SQL Server Management Studio.

True False

Pear Deck Interactive Slide
Do not remove this bar

Students choose an option

Use this space to take notes:

Slide 4

Your Response

Slide 4

Your Response

I've created SampleRetail database and executed a query.

True **False**

 Pear Deck

 Students choose an option

Pear Deck Interactive Slide
Do not remove this bar

Use this space to take notes:

Slide 5

Table of Contents ➤

- ▶ What is a database?
- ▶ What is in a database?
- ▶ Structured Query Language (SQL)
- ▶ SQL Language Elements

CLARUSWAY®
Your IT Education Platform



Use this space to take notes:

Slide 6



What is a database?

CLARUSWAY®
WAY TO REINVENT YOURSELF

Use this space to take notes:

Slide 7

Your Response

A blue-themed interactive slide template from Pear Deck. It features a cartoon character with orange hair and a lightbulb above their head, suggesting an idea or question. The text on the left asks, "Could you define what the database is?". The bottom left corner has a green icon with a student profile and the text "Students, write your response!". The bottom right corner has a small icon and the text "Pear Deck Interactive Slide".

Use this space to take notes:

Slide 8

► What is a database?



"A database is an organized collection of data stored in a computer system."

CLARUSWAY®
way to knowledge revealed

8

Use this space to take notes:

Slide 9

► How are databases used in the real-world?

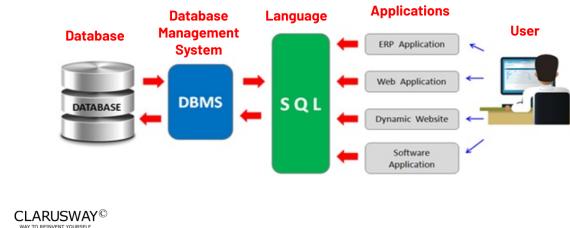


9

Use this space to take notes:

Slide 10

► Database Management System



Use this space to take notes:

Slide 11

► Database Management System



Use this space to take notes:

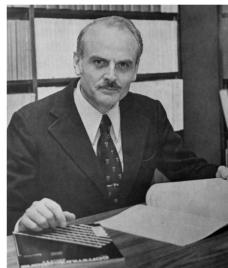
Slide 12

► Types of Database Management System

Edgar Frank "Ted" Codd
(19 August 1923 – 18 April 2003)

English computer scientist

While working for IBM, invented the relational model for database management.



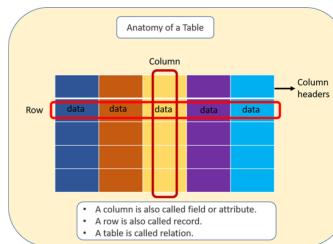
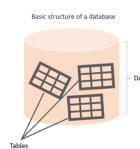
CLARUSWAY®
www.clarusway.com

12

Use this space to take notes:

Slide 13

► What is in a database?



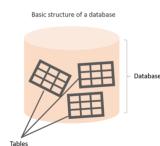
CLARUSWAY®
www.clarusway.com

13

Use this space to take notes:

Slide 14

► What is in a database?



emp_id	first_name	last_name	salary	job_title	gender	hire_date
26650	Elvis	Ritter	86000	Sales Manager	Male	11/24/2017
70950	Rodney	Weaver	87000	Project Manager	Male	12/20/2018
97927	Billie	Lanning	67000	Web Developer	Female	6/25/2016
67323	Lisa	Wiener	75000	Business Analyst	Female	8/9/2018
17679	Robert	Gillmore	110000	Operations Director	Male	9/4/2018
76589	Jason	Christian	99000	Project Manager	Male	1/21/2019
51821	Linda	Foster	95000	Data Scientist	Female	4/29/2019
71329	Gayle	Meyer	77000	HR Manager	Female	6/28/2019
49714	Hugo	Forester	55000	IT Support Specialist	Male	11/22/2019
30840	David	Barrow	85000	Data Scientist	Male	12/2/2019

employee table

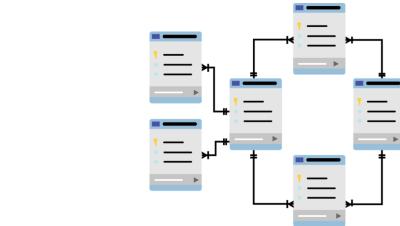
CLARUSWAY®
way to success



Use this space to take notes:

Slide 15

► What is in a database?



CLARUSWAY®
way to success



Use this space to take notes:

Slide 16



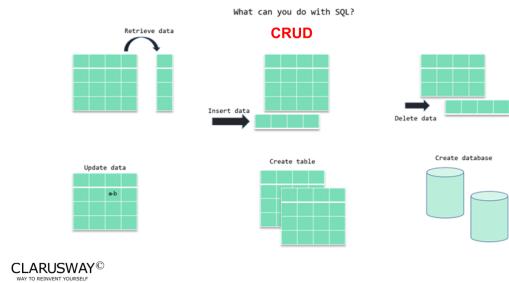
3 Structured Query Language (SQL)

CLARUSWAY®
WAY TO REINVENT YOURSELF

Use this space to take notes:

Slide 17

▶ Structured Query Language (SQL) ➔



17

Use this space to take notes:

Slide 18

SQL Language Rules



- 1) SQL is **not case-sensitive** (Except our Strings)
- 2) SQL syntax looks like **English Grammar**



```
SELECT name, profit  
FROM Companies  
WHERE location == 'USA'  
ORDER BY number_of_employees;
```

- 3) A **semicolon ;** is placed at the end of completed commands
- 4) Generally, **BNF** notation is used
Keywords >> Upper Case
Identifiers >> Lower Case

Example: `DROP TABLE students;`

- 5) **Non-numeric** expressions are enclosed in **single quotes**
Examples: 'New York', 'John', '2023-01-01'

CLARUSWAY®
WAY TO REINVENT YOURSELF

Use this space to take notes:

Slide 19

►SQL Language Elements



SQL Language Elements (SQL Syntax)

```
SELECT first_name FROM employees;
```

Color coding	Keyword	Identifiers	Terminating Semicolon
	Statement		

CLARUSWAY®
WAY TO REINVENT YOURSELF

19

Use this space to take notes:



Basic SQL Commands



- ❖ Select (TOP, DISTINCT, AS)
- ❖ From
- ❖ Where (AND, OR)
- ❖ Operators (IN, BETWEEN, LIKE, NOT, =, >, <, <>)
- ❖ Order By (ASC, DESC)

CLARUSWAY®
WAY TO REINVENT YOURSELF

Use this space to take notes:



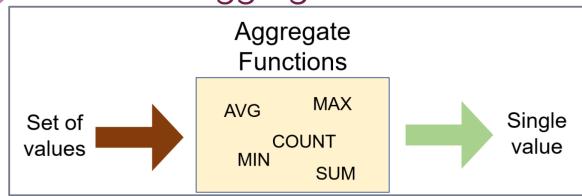
Aggregate Functions

CLARUSWAY®
WAY TO REINVENT YOURSELF

Use this space to take notes:

Slide 22

► What is an aggregate function? ➤



Aggregate functions are functions that take a collection of values as input and **return a single value**

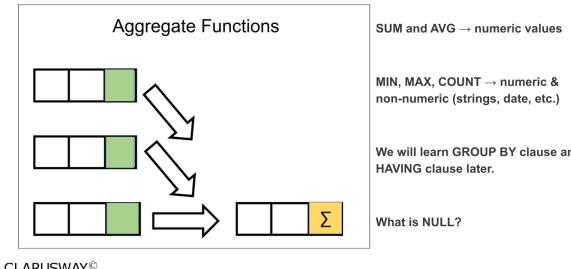
CLARUSWAY®
way to success

22

Use this space to take notes:

Slide 23

► What is an aggregate function? ➤



CLARUSWAY®
way to success

23

Use this space to take notes:

Slide 24

What is NULL?

NULL means no data and is a special value in SQL.
It shows us that a piece of information is unknown or missing
or not applicable.

TrackId	Name	AlbumId	MediaTypeId	GenreId	Composer
1	For Those About To Rock (We Salute...)	1	1	1	Angus Young, Malcolm Young, Brian ...
2	Balls to the Wall	2	2	1	NULL
3	Fast As a Shark	3	2	1	F. Baltes, S. Kaufman, U. Dirksmeide...
4	Restless and Wild	3	2	1	F. Baltes, R.A. Smith-Diesel, S. ...
5	Princess of the Dawn	3	2	1	Deafly & R.A. Smith-Diesel
6	Put The Finger On You	1	1	1	Angus Young, Malcolm Young, Brian ...
7	Let's Get It Up	1	1	1	Angus Young, Malcolm Young, Brian ...

CLARUSWAY®
WAY TO REINVENT YOURSELF

Use this space to take notes:

Slide 25

2 COUNT Function

CLARUSWAY®
WAY TO REINVENT YOURSELF

Use this space to take notes:

Slide 26

► COUNT Function

We use **COUNT** function to count the numbers of records (a.k.a row) in a table.

Syntax

```
1 SELECT COUNT(column_name)
2 FROM table_name;
3
```

CLARUSWAY®
Your #1 resource for Data Science

28

Use this space to take notes:

Slide 27

► COUNT Function

How many students have enrolled the courses?

student_id	first_name	last_name	gender	major	enrolled_courses	enroll_date	last_update
1	Christopher	Mitchell	M	Computer Science	Data Structures	2019-01-01	2019-01-01
2	Christopher	Smith	M	Computer Science	Data Structures	2019-01-01	2019-01-01
3	Christopher	White	M	Computer Science	Data Structures	2019-01-01	2019-01-01
4	Christopher	King	M	Computer Science	Data Structures	2019-01-01	2019-01-01
5	Christopher	Hughes	M	Computer Science	Data Structures	2019-01-01	2019-01-01
6	Christopher	Johnson	M	Computer Science	Data Structures	2019-01-01	2019-01-01
7	Christopher	Anderson	M	Computer Science	Data Structures	2019-01-01	2019-01-01
8	Christopher	Taylor	M	Computer Science	Data Structures	2019-01-01	2019-01-01
9	Christopher	Miller	M	Computer Science	Data Structures	2019-01-01	2019-01-01
10	Christopher	Green	M	Computer Science	Data Structures	2019-01-01	2019-01-01
11	Christopher	Tucker	M	Computer Science	Data Structures	2019-01-01	2019-01-01
12	Christopher	White	M	Computer Science	Data Structures	2019-01-01	2019-01-01
13	Christopher	Lee	M	Computer Science	Data Structures	2019-01-01	2019-01-01
14	Christopher	Angus	M	Computer Science	Data Structures	2019-01-01	2019-01-01

query :

```
1 SELECT COUNT(first_name)
2 FROM student_info;
3
```

output :

```
1 COUNT(first_name) -----
2 32
3 4
```

27

Use this space to take notes:

Slide 28

► COUNT Function

There is another special character returning the number of rows in a table. That is * character. Use it inside the COUNT function as **COUNT(*)**.

Use this space to take notes:

Slide 29

► COUNT Function



An important point for **COUNT(*)** function is that the result table includes **NULL**. If you want the number of non-null values, use the syntax:
COUNT(column_name)

Use this space to take notes:

Slide 30



Query Time



CLARUSWAY®
WAY TO REINVENT YOURSELF

Use this space to take notes:

Slide 31



3 COUNT DISTINCT

CLARUSWAY®
WAY TO REINVENT YOURSELF

Use this space to take notes:

Slide 32

► COUNT DISTINCT

In some cases, we may want unique values. In those cases, we use **COUNT DISTINCT** function.

Syntax

COUNT(DISTINCT column_name)

CLARUSWAY®
way to success



32

Use this space to take notes:

Slide 33

► COUNT (DISTINCT column_name)



How many unique fields are there in the student_info table?

	student_id	first_name	last_name	gender	marks	country	field	start_date
1	LEONIE Michael	Michael	Leonie	M	95	Australia	Data DBA	2019-07-10
2	LEONIE Gina	Gina	Leonie	F	95	United Kingdom	Back End Developer	2019-03-10
3	LEONIE John	John	Leonie	M	95	United Kingdom	Front End Developer	2019-03-10
4	LEONIE Megan	Megan	Leonie	F	95	United Kingdom	Back End Developer	2019-03-10
5	LEONIE Michael	Michael	Leonie	M	95	Australia	Data Science	2019-03-10
6	LEONIE Peter	Peter	Leonie	M	95	Australia	Data Science	2019-03-10
7	LEONIE Werner	Werner	Leonie	M	95	United Kingdom	Front End Developer	2019-03-10
8	LEONIE Gina	Gina	Leonie	F	95	United Kingdom	Front End Developer	2019-03-10
9	LEONIE John	John	Leonie	M	95	United Kingdom	Front End Developer	2019-03-10
10	LEONIE Megan	Megan	Leonie	F	95	United Kingdom	Front End Developer	2019-03-10
11	LEONIE Michael	Michael	Leonie	M	95	Australia	Data Science	2019-03-10
12	LEONIE Peter	Peter	Leonie	M	95	Australia	Data Science	2019-03-10
13	LEONIE Werner	Werner	Leonie	M	95	United Kingdom	Quality Assurance	2019-03-10
14	LEONIE Gina	Gina	Leonie	F	95	United Kingdom	Quality Assurance	2019-03-10
15	LEONIE John	John	Leonie	M	95	United Kingdom	Quality Assurance	2019-03-10
16	LEONIE Megan	Megan	Leonie	F	95	United Kingdom	Quality Assurance	2019-03-10

input:

```
1 SELECT COUNT(DISTINCT field) AS count_of_field  
FROM student_info;
```

3

output:

```
2 -----  
3 6
```

33

Use this space to take notes:

Slide 34



Query Time



CLARUSWAY®
WAY TO REINVENT YOURSELF

Use this space to take notes:

Slide 35



MIN & MAX

CLARUSWAY®
WAY TO REINVENT YOURSELF

Use this space to take notes:

Slide 36

► MIN Function

MIN function returns the minimum value in the selected column. The MIN function ignores the NULL values.

Syntax

```
1 SELECT MIN(column_name)
2 FROM table_name;
3
```

CLARUSWAY®
way to success

38

Use this space to take notes:

Slide 37

► MIN Function

Who gets paid the lowest wage in the company?

emp_id	first_name	last_name	salary	job_title	gender	hire_date
28650	Eduis	Ritter	86000	Sales Manager	Male	11/24/2017
70950	Reiley	Weaver	87000	Project Manager	Male	12/20/2018
97917	Bible	Lentz	87000	Web Developer	Female	6/25/2018
67303	Lisa	Wane	76000	Analyst	Female	6/9/2018
17679	Robert	Gilmore	110000	President	Male	6/4/2018
76889	Jean	Christiansen	99000	Project Manager	Male	1/21/2019
51817	Linda	Foster	95000	Data Scientist	Female	4/29/2019
71320	Gayle	Meyer	77000	IT Support Specialist	Female	6/26/2019
49714	Hugo	Forster	55000	IT Support Specialist	Male	11/23/2018
30840	David	Barrow	85000	Data Scientist	Male	12/2/2019

query :

```
1 SELECT MIN(salary) AS lowest_salary
2 FROM employees;
```

output :

```
1 lowest_salary
2 -----
3 55000
4
```

CLARUSWAY®
way to success

37

Use this space to take notes:

Slide 38

► MIN Function



What is the earliest hired employee's date?

emp_id	first_name	last_name	salary	job_title	gender	hire_date
28650	Evelyn	Ritter	86000	Sales Manager	Male	11/24/2017
70950	Rodney	Weaver	87000	Project Manager	Male	12/20/2018
97927	Bible	Leving	87000	Web Developer	Female	8/25/2018
67323	Lisa	Werner	76500	Data Analyst	Female	8/9/2018
17679	Robert	Glover	110000	Product Director	Male	9/4/2018
76849	Jean	Christian	98000	Project Manager	Male	1/21/2019
51821	Linda	Foster	95000	Data Scientist	Female	4/28/2019
73329	Osyle	Meyer	77000	HR Manager	Female	6/28/2019
49714	Hugo	Forster	55000	Software Specialist	Male	11/22/2018
30840	David	Barrow	85000	Data Scientist	Male	12/2/2019

query :

```
1 SELECT MIN(hire_date) AS earliest_date
```

```
2 FROM employees;
```

```
3
```

output :

```
1 earliest_date
```

```
2 -----
```

```
3 2017-11-24
```

```
4
```

CLARUSWAY®
Your Path to Knowledge Unleashed

38

Use this space to take notes:

Slide 39

► MAX Function



MAX function returns the maximum value in the selected column.

Syntax

```
1 SELECT MAX(column_name)
2 FROM table_name;
3
```

CLARUSWAY®
Your Path to Knowledge Unleashed

39

Use this space to take notes:

Slide 40

► MAX Function



What is the highest wage in the company?

emp_id	first_name	last_name	salary	job_title	gender	hire_date
28650	Evelyn	Ritter	86000	Sales Manager	Male	11/24/2017
70950	Rodney	Weaver	87000	Project Manager	Male	12/20/2018
97927	Beth	Leving	87000	Web Developer	Female	6/25/2018
67223	Lisa	Werner	76500	Data Analyst	Female	6/9/2018
17679	Robert	Glover	110000	General Director	Male	9/4/2018
76589	Jean	Christian	98000	Project Manager	Male	1/21/2019
51821	Linda	Foster	95000	Data Scientist	Female	4/28/2019
73259	Osyle	Meyer	77000	HR Manager	Female	6/28/2019
49714	Hugo	Forster	55000	Software Specialist	Male	11/22/2018
30840	David	Barrow	85000	Data Scientist	Male	12/2/2019

QUERY :

```
1 SELECT MAX(salary) AS highest_salary  
2 FROM employees;  
3
```

Output :

```
1 highest_salary  
2 -----  
3 110000
```

CLARUSWAY®
WAY TO REINVENT YOURSELF

40

Use this space to take notes:

Slide 41



► Query Time



CLARUSWAY®
WAY TO REINVENT YOURSELF

Use this space to take notes:

Slide 42



► SUM and AVG

CLARUSWAY®
WAY TO REINVENT YOURSELF

Use this space to take notes:

Slide 43

► SUM Function



SUM function returns the sum of a numeric column.

Syntax

```
1 SELECT SUM(column_name)
2 FROM table_name;
3
```

43

CLARUSWAY®
way to reinvent yourself

Use this space to take notes:

Slide 44

► SUM Function

What is total amount salary of the employees?

emp_id	first_name	last_name	salary	job_title	gender	hire_date
28650	Eduis	Ritter	86000	Sales Manager	Male	11/24/2017
70950	Rodney	Weaver	87000	Project Manager	Male	12/20/2018
97927	Bible	Lanning	87000	Web Developer	Female	6/25/2018
67323	Lisa	Werner	76000	Software Analyst	Female	6/9/2018
17679	Robert	Glover	110000	System Director	Male	6/4/2018
76589	Jean	Christiansen	96000	Project Manager	Male	1/21/2019
51871	Linda	Foster	95000	Data Scientist	Female	4/29/2019
71329	Gayle	Meyer	77000	HR Support	Female	6/28/2019
49714	Hugo	Forster	55000	Quality Specialist	Male	11/22/2018
30840	David	Barrow	85000	Data Scientist	Male	12/2/2019

What is total amount
salary of the male
employees?

query:

```
1: SELECT SUM(salary) AS total_salary
2: FROM employees;
3: |||
```

output:

```
1: total_salary
2: 836000
3: 836000
4: |||
```

SELECT SUM(salary) as male_salary
FROM employees
WHERE gender='Male'



44

Use this space to take notes:

Slide 45

► Query Time



CLARUSWAY®
WAY TO REINVENT YOURSELF.

Use this space to take notes:

Slide 46



▶ AVG Function

CLARUSWAY®
WAY TO REINVENT YOURSELF

Use this space to take notes:

Slide 47

▶ AVG Function



AVG function calculates the average of a numeric column.

Syntax

```
1 SELECT AVG(column_name)
2 FROM table_name;
3
```



CLARUSWAY®
way to reinvent yourself

Use this space to take notes:

Slide 48

► AVG Function

What is the average salary of the employees?

emp_id	first_name	last_name	salary	job_title	gender	hire_date
26601	Elvis	Ritter	86000	Sales Manager	Male	1/12/2016
70960	Rodney	Weaver	87000	Project Manager	Male	12/20/2016
31927	Billie	Levering	67000	Web Developer	Female	6/25/2019
61323	Lisa	Werner	76000	Business Analyst	Female	8/9/2011
11679	Robert	Gilmire	110000	Category Director	Male	9/4/2011
16649	Jean	Christoff	99000	Product Manager	Male	1/21/2019
51827	Linda	Foster	96000	Data Scientist	Female	4/29/2019
71129	Gayle	Meyer	77000	HR Manager	Female	6/28/2019
49714	Hugo	Forster	55000	IT Support Specialist	Male	11/22/2019
30840	David	Borrows	85000	Data Scientist	Male	12/2/2019

query:

```
1 SELECT AVG(salary) AS average_salary
```

```
2 FROM employees;
```

```
3 |||
```

output:

```
1 average_salary
```

```
2 -----
```

```
3 83680.0
```

```
4
```

CLARUSWAY®
WAY TO REINVENT YOURSELF

48

Use this space to take notes:

Slide 49

► Query Time



CLARUSWAY®
WAY TO REINVENT YOURSELF

Use this space to take notes:

Slide 50



1 ▶ GROUP BY Clause

CLARUSWAY®
WAY TO REINVENT YOURSELF

Use this space to take notes:

Slide 51

▶ GROUP BY Clause



The **GROUP BY** clause groups the rows into summary rows. It returns one value for each group and is typically used with aggregate functions (COUNT, MAX, MIN, SUM, AVG).

	Gender	COUNT(Gender)	→ 4
	Male	COUNT(Gender) WHERE Gender = 'Male'	→ 2
	Female	COUNT(Gender) WHERE Gender = 'Female'	→ 2
	Female	COUNT(Gender) WHERE Gender = 'Female'	→ 2

CLARUSWAY®
way to reinvent yourself

51

Use this space to take notes:

Slide 52

► GROUP BY Clause ➤

Syntax

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

CLARUSWAY®
way to knowledge evolution

52

Use this space to take notes:

Slide 53

► GROUP BY Clause ➤



- GROUP BY returns only one result per group of data.
- GROUP BY Clause always **follows the WHERE Clause**.
- GROUP BY Clause always **precedes the ORDER BY**.

CLARUSWAY®
way to knowledge evolution

53

Use this space to take notes:

Slide 54



▶ GROUP BY with COUNT Function

CLARUSWAY®
WAY TO REINVENT YOURSELF

Use this space to take notes:

Slide 55

▶ GROUP BY with COUNT Function



What is the number of employees per gender?

query:

1	SELECT	gender	,	COUNT	(gender)
2	FROM	employees			
3	GROUP	BY	gender;		
4					

output:

1	gender	COUNT(gender)
2	-----	-----
3	Female	6
4	Male	6
5		

Use this space to take notes:



CLARUSWAY®
way to reinvent yourself



Slide 56

► GROUP BY Clause

The **GROUP BY** clause groups results before calling the aggregate function. This allows you to apply aggregate function to groups than the entire query.

gender
Male
Female
Female
Female
Female

gender	COUNT(gender)
Male	6
Female	4

CLARUSWAY®
www.clarusway.com



56

Use this space to take notes:

Slide 57

► GROUP BY with COUNT Function

What is the number of employees working as a data scientist broken by gender?

query:

```
1: SELECT gender, COUNT(job_title)
2: FROM employees
3: WHERE job_title = "Data Scientist"
4: GROUP BY gender;
5: 
```

Output:

```
1: gender   COUNT(job_title)
----- 
2: Female    1
3: Male     1
4: 
```

CLARUSWAY®
www.clarusway.com



57

Use this space to take notes:

Slide 58

► GROUP BY Clause



- WHERE clause operates on the data before the aggregation.
- WHERE clause happens before the GROUP BY clause.
- Only the rows that meet the conditions in the WHERE clause are grouped.

Use this space to take notes:

Slide 59

► Query Time



Use this space to take notes:

Slide 60



GROUP BY with MIN & MAX Functions

CLARUSWAY®
WAY TO REINVENT YOURSELF

Use this space to take notes:

Slide 61

GROUP BY with MIN & MAX Functions



Let's find the minimum salaries of each gender group using the **MIN** function.

Employee ID	First Name	Last Name	Job Title	Salary	Gender	Hire Date
28610	Laura	Pittner	Sales Manager	86000	Male	11/24/2001
70950	Rodney	Weaver	Sales Manager	87000	Male	12/20/2018
87927	Billie	Lanning	Web Developer	87000	Female	6/25/2018
67223	Lita	Winer	Business Development	76000	Female	8/9/2018
17679	Robert	Gilmores	Operations	110000	Male	8/4/2018
76589	Jean	Christian	Product Manager	96000	Male	1/21/2019
51821	Linda	Fester	Data Scientist	95000	Female	4/29/2019
71329	Oswy	Mayer	HR Manager	77000	Female	6/28/2019
49714	Hugo	Forster	IT Support	55000	Male	11/22/2018
30940	David	Barrow	Delta Scientist	85000	Male	12/2/2019

query:

```
1 SELECT gender, MIN(salary) AS min_salary  
2 FROM employees  
3 GROUP BY gender;
```

OUTPUT

1	gender	min_salary
2	Male	67000
3	Female	67000
4	Male	55000
5	Female	55000

Use this space to take notes:



CLARUSWAY®
WAY TO REINVENT YOURSELF

61

Slide 62

► GROUP BY with MIN & MAX Functions

Similarly, we can find the maximum salaries of each group using the `MAX` function. You may also use the `ORDER BY` clause to sort the salaries in descending or ascending order. The `ORDER BY` follows `GROUP BY`. For instance, sort the maximum salaries in descending order.

emp_id	first_name	last_name	salary	job_title	gender	hire_date
28650	Elvis	Kitter	86000	Sales Manager	Male	11/24/2017
70950	Rodney	Weaver	87000	Project Manager	Male	12/20/2018
97977	Billie	Lannin	87000	Web Developer	Female	6/25/2018
67223	Lila	Waine	76000	Analyst	Female	8/9/2018
17871	Robert	Glimore	110000	Operations Director	Male	8/4/2018
76540	Jean	Christian	99000	Project Manager	Male	1/21/2019
51821	Linda	Foster	95000	Data Architect	Female	4/29/2019
71320	Grady	Meyer	77000	Marketing Manager	Female	6/28/2019
49714	Hugo	Forrester	56000	IT Support Specialist	Male	11/22/2018
30840	David	Barrow	85000	Data Scientist	Male	10/2/2019

query:

```
1 SELECT gender, ..... max_salary
2   FROM employees
3   GROUP BY gender
4   ORDER BY max_salary DESC;
```

Output:

```
1 gender ..... max_salary
2 3 Male 110000
3 4 Female 95000
4 5
```

CLARUSWAY®
WAY TO REINVENT YOURSELF

62

Use this space to take notes:

Slide 63

► Query Time



»

CLARUSWAY®
WAY TO REINVENT YOURSELF

Use this space to take notes:

Slide 64



► GROUP BY with SUM & AVG Functions

CLARUSWAY®
way to reinvent yourself

Use this space to take notes:

Slide 65

► GROUP BY with SUM & AVG Functions ►

Let's calculate the total salaries of each group (gender).

emp_id	first_name	last_name	salary	job_title	gender	hire_date
26650	Evelyn	Ritter	86000	Sales Manager	Male	11/24/2017
70950	Rodney	Wasser	87000	Project Manager	Male	12/20/2018
97927	Bible	Lannan	67000	Web Developer	Female	6/25/2018
87223	Lisa	Winer	76000	Business Analyst	Female	8/9/2018
17679	Robert	Gilmour	110000	Operations Manager	Male	9/4/2018
76569	Jasen	Christian	99000	Project Manager	Male	1/21/2019
51821	Linda	Foster	95000	Data Scientist	Female	4/29/2019
71329	Gayle	Meyer	77000	HR Manager	Female	8/28/2019
49714	Hugo	Forster	55000	IT Support Specialist	Male	11/22/2018
30940	David	Berryew	85000	Data Scientist	Male	12/2/2019

query:
1 SELECT gender, SUM(salary) AS total_salary
2 FROM employees
3 GROUP BY gender;
output:
1 gender total_salary
2 ----- -----
3 Female 314000
4 Male 522000
5



Use this space to take notes:

Slide 66

► GROUP BY with SUM & AVG Functions

Similarly, we can find the average salaries of each group using the **AVG** function.

emp_id	First Name	Last Name	Salary	Job Title	Gender	Hire Date
29650	Evelyn	Ritter	86000	Sales Manager	Male	11/24/2017
70950	Rodney	Weaver	87000	Project Manager	Male	12/20/2018
87927	Billy	Lanning	87000	Web Developer	Female	6/25/2018
87323	Lisa	Werner	76500	Business Analyst	Female	8/9/2018
17679	Robert	Gillespie	110000	Operations Manager	Male	5/4/2018
76589	Jason	Christian	99000	Project Manager	Male	1/21/2019
51821	Linda	Foster	86000	Data Scientist	Female	4/29/2019
71329	Gayle	Mayer	77000	HR Manager	Female	6/28/2019
49714	Hugo	Forster	85000	IT Support	Male	11/22/2018
30940	David	Barker	85000	Data Scientist	Male	12/2/2019

QUERY:

```
1 SELECT gender, AVG(salary) AS average_salary
```

```
2 FROM employees
```

```
3 GROUP BY gender;
```

output:

```
1 gender: average_salary
```

```
2 -----
```

```
3 Male: 87800.0
```

```
4 Female: 87800.0
```

CLARUSWAY®
WAY TO REINVENT YOURSELF

68

Use this space to take notes:

Slide 67

► Query Time



»

CLARUSWAY®
WAY TO REINVENT YOURSELF

Use this space to take notes:

Slide 68

Your Response

Slide 68

Your Response

Is everything clear so far?



Students choose an option

Pear Deck Interactive Slide
Do not remove this bar

Use this space to take notes:

Slide 69

Your Response

How well did you like this lesson?



Students, drag the icon!

Pear Deck
Do not remove this bar

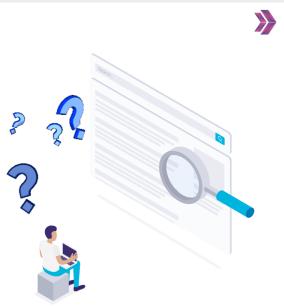
Use this space to take notes:

THANKS!

Any questions?

You can reach us at:

- ▶ @adsum
- ▶ @Owen



CLARUSWAY®
WAY TO REINVENT YOURSELF

Use this space to take notes: