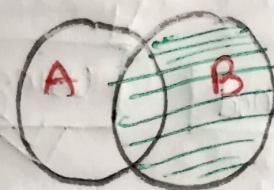


| first-name | last-name | money-spent | |
|------------|-----------|-------------|--|
| Boy | George | 135.49 | |
| George | Michael | 813.17 | |
| David | Bowie | NULL | |
| Blue | Stelle | NULL | |
| Butte | Davis | 450.25 | |

RIGHT JOIN



gives everything from B along with any matching records from A

① insert into orders (order-date, amount, customer-id)

values (curdate(), 100);

② select * from orders;

| id | order-date | amount | customer-id |
|----|------------|--------|-------------|
| 8 | 2023-10-01 | 100.00 | NULL |

Ex-8 → Select first-name, last-name, order-date, amount
FROM customers RIGHT JOIN orders on customers.id
= orders.customer-id;

| first-name | last-name | order-date | amount |
|------------|-----------|------------|--------|
| .. | .. | .. | .. |
| Butte | Davis | 1999-04-11 | 450.25 |
| NULL | NULL | 2023-10-11 | 100.00 |

ON DELETE CASCADE

Q. How can you delete a customer name say 'Chorze' and its corresponding order details. As both are linked by Foreign key?

Ans) Delete from customers where last-name = 'Chorze';

X Fails

outputs cannot delete or update a row a Foreign key constraint fails.

Two methods we have

Using update method

Using Delete cascade

lets recreate the tables;

First we need to delete orders, customers tables

then

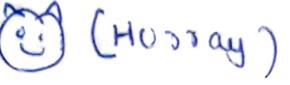
create table customers (same syntax)

In orders table

```
CREATE TABLE ORDERS ( id INT PRIMARY KEY AUTO_INCREMENT,  
order-date DATE, amount DECIMAL (8,2),  
customer-id INT, FOREIGN KEY (customer-id)  
REFERENCES customers (id)
```

ON DELETE CASCADE

;

If now of a corresponding user-name is deleted its corresponding order will also be deleted;  (Hurray)

Now, delete from customers where last-name = 'Orange';



select * from customers

| id | first-name | last-name | email |
|----|------------|-----------|-------------------|
| 1 | Boy | Orange | orange@orange.com |
| 2 | .. | .. | ..@.. |
| 3 | .. | .. | ..@.. |
| 4 | .. | .. | ..@.. |
| 5 | .. | .. | ..@.. |

Successfully deleted

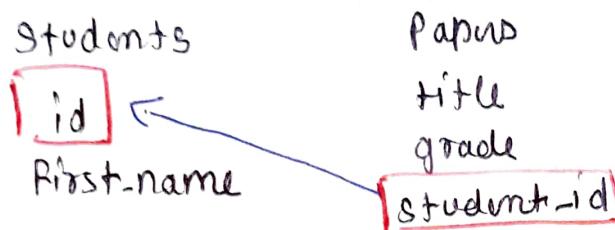
select * from orders;

| id | order-date | amount | customer-id |
|----|------------|--------|-------------|
| 3 | 2014-12-12 | 800.67 | 2 |
| 4 | 2015-01-03 | 12.50 | 2 |
| 5 | 1999-04-11 | 450.25 | 5 |

corresponding
ord details
also deleted
with set that
 $= id$

Exercise

① Write the Schema?



ans → create table students (id INT PRIMARY KEY AUTO_INCREMENT,
first-name VARCHAR(50));

CREATE TABLE papers (title VARCHAR(50), grade INT,
student_id INT, FOREIGN KEY (student_id) REFERENCES
students (id));

| first-name | title | grade |
|------------|--------------|-------|
| Samantha | De .. | 98 |
| samantha | Russian .. | 94 |
| charles | Borges .. | 89 |
| caleb | My second .. | 75 |
| caleb | My First .. | 60 |

ans → select first-name, title, grade
from Students . .

Must practise Exercise-13



~~QUESTION~~ MAN TO MANY

| first-name | average | passing-status |
|------------|---------|----------------|
| Samantha | 96.000 | PASSING |
| Carlos | 89.000 | PASSING |
| Calib | 67.500 | FAILING |
| Ros | 0 | FAILING |
| Lisa | 0 | FAILING |

~~Select~~ Select first-name, IFNULL(AVG(grade), 0) as average,

CASE
when IFNULL(AVG(grade), 0) ≥ 60 then 'PASSING'

else 'FAILING'

end as passing-students

~~X~~ from students, id = papers, student-id

GROUP BY first-name

order by average desc ;

Section-14

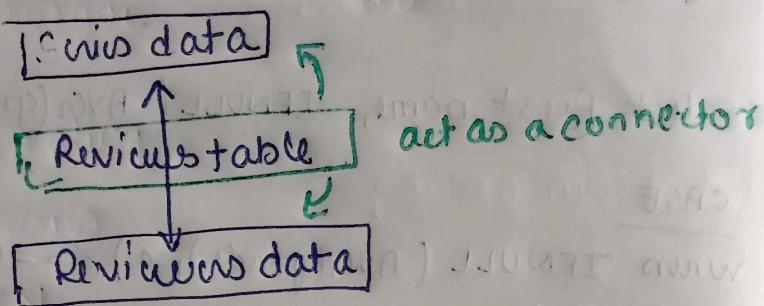
MANY TO MANY

Books \rightleftharpoons Authors

Blog, post \rightleftharpoons Tags

Students \leftrightarrow classes

- Imaging we are building a t.v show reviewing application,



| Reviewers | | |
|-----------|----|------------|
| | id | first-name |
| | 1 | Blue |
| | 2 | Wyatt |

| Scrivs | | |
|--------|----|--------|
| | id | title |
| | 1 | Archer |
| | 2 | Fargo |

| Reviewer | | |
|----------|----|--------|
| | id | rating |
| | 1 | 8.5 |
| | 2 | 7.8 |

| Reviews | | | |
|---------|----|------------|-----------|
| | id | first-name | last-name |
| | 1 | Blue | Stule |
| | 2 | Wyatt | Earp |

| Scrivs | | | | |
|--------|----|--------|---------------|-----------|
| | id | title | released-year | genre |
| | 1 | Archer | 2009 | Animation |
| | 2 | Fargo | 2014 | Drama |

Reviews

| id | rating | reviewer-id | movie-id |
|----|--------|-------------|----------|
| 1 | 8.9 | 1 | 2 |
| 2 | 9.5 | 2 | 2 |

g. Create New database movies-db and then three tables
 Reviews, Sums, Reviews linked together by foreign
 key.

- ① CREATE TABLE reviewers(id INT PRIMARY KEY AUTO_INCREMENT,
 first-name VARCHAR(50) NOT NULL,
 last-name VARCHAR(50) NOT NULL,);
- ② CREATE TABLE sums (id INT PRIMARY KEY AUTO_INCREMENT,
 title VARCHAR(50), released-year YEAR, genre VARCHAR
 (100));
- ③ CREATE TABLE reviews(id INT PRIMARY KEY
 AUTO_INCREMENT,
 rating DECIMAL (2,1),
 sums-id INT,
 reviewers-id INT,
 FOREIGN KEY (sums-id) REFERENCES sums(id),
 FOREIGN KEY (reviewers-id) REFERENCES reviewers(id)
);

Q.1

| title | rating |
|----------------------|--------|
| Archer | 8.0 |
| Archer | 7.5 |
| Archer | 8.5 |
| Archer | 7.7 |
| Archer | 8.9 |
| Arrested Development | 8.1 |
| ?? | 6.0 |
| ?? | 8.0 |
| Bob's Burgers | 7.0 |

code → select title, rating

from reviews

join

reviews on reviews.id = reviews.show_id;

Q.2

| title | avg-rating |
|----------------------|------------|
| Chronical Hospital | 5.38 |
| Bob's Burgers | 7.58 |
| Sci-Fi U | 7.60 |
| Bosack Horsuman | 7.94 |
| Arrested Development | 8.08 |
| Curb your enthusiasm | 8.12 |

code → select

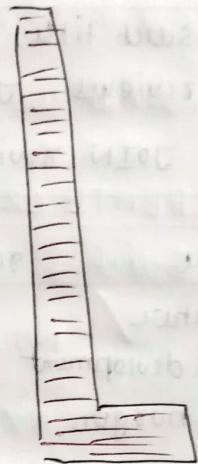
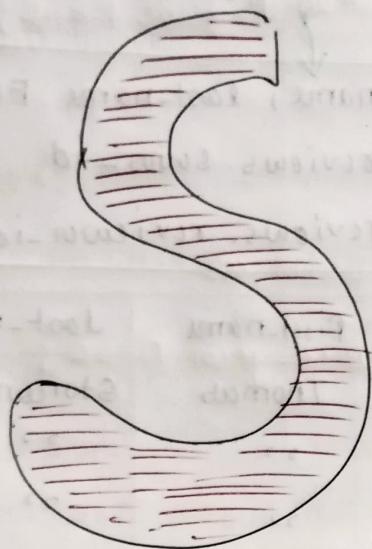
title, round(Avg(rating), 2) as
avg-rating

FROM

with
 JOIN
 reviews ON reviews.id = reviews.movie_id
 GROUP BY title
 ORDER BY avg-rating ;

| first-name | last-name | rating |
|------------|-----------|--------|
| Thomas | Stoneman | 8.0 |
| Thomas | Stoneman | 8.1 |
| Thomas | Stoneman | 7.0 |
| Thomas | Stoneman | 7.5 |
| Thomas | Stoneman | 9.5 |
| Wyatt | Skaggs | 7.5 |
| Wyatt | Skaggs | 7.6 |
| Wyatt | Skaggs | 9.3 |

practise
 from
PPT



PART → 2

Section-15

Introduction views

Q. what is a review?

Ex. → lets create a table

Yamv

```
Select title, released_year, genre, first_name, last_name FROM
reviews JOIN reviews ON reviews.id = reviews_review_id
JOIN reviewers ON reviews.id = reviews_reviewer_id;
```

| title | released_year | genre | rating | first_name | last_name |
|----------------------|---------------|-----------|--------|------------|-----------|
| Archer | 2009 | Animation | 8.0 | Thomas | Stoneham |
| Animated development | 2003 | Comedy | 8.1 | ?? | ?? |
| Bob's Burgar | 2011 | Animation | 7.0 | ?? | ?? |
| Bojack Horseman | 2014 | Animation | 7.5 | ?? | ?? |
| Breaking Bad | 2008 | Drama | 9.5 | ?? | ?? |
| Archer | 2009 | Animation | 7.5 | Wyatt | Skaggs |
| Bojack Horseman | 2014 | Animation | 7.6 | Wyatt | ?? |
| Breaking Bad | 2008 | Drama | 9.3 | ?? | ?? |
| Curb your enthusiasm | 2000 | Comedy | 6.5 | ?? | ?? |
| ?? | 2000 | Comedy | 8.4 | ?? | ?? |
| Fargo | | | | | |
| ?? | | | | | |
| ?? | | | | | |
| ?? | | | | | |

→ the view command will create a virtual review of this table;

CREATE VIEW Full_reviews AS

Yamv

Yamv

Show tables; → full_reviews table will be created;
Now we can do operation on this new table, like group by, etc...
* (at least without constraint selecting)

We cannot do all SQL operations on this table

Ex → DELETE FROM full_reviews WHERE released_year = 2010;

Error 1395 (HY000) cannot delete from join view ftv-db.full_reviews

A small portion of views are updatable and deletable

Any functions in views like SUM(), MIN(), MAX(), COUNT(),
DISTINCT, GROUP BY, HAVING, UNION OR UNION ALL etc...

Ex. 2 → Select * From swis

There are 14 columns rows

Let's create this as a view

```
CREATE VIEW ordered_swis AS  
Select * From swis;
```

Let's insert into ordered_swis (title, released_year, genre)

Values ('The Great', 2020, 'comedy');

✓ WORKS

It works as it didn't break any rule

DELETE FROM ordered_swis WHERE title = 'The Great';

✓ WORKS

Replacing / Altering views

- Q. what if want to arrange the views in desc order?
 ① create view ordered_songs as

Select * FROM songs ORDER BY released_year DESC;

Output → Error table already exists

What we do?

CREATE OR REPLACE VIEW ordered_songs as

Select * From songs ORDER BY released_year DESC;
 ✓ Now it will work

or

ALTER VIEW ordered_songs AS Select * From songs ORDER BY released_year;

Both ALTER / REPLACE can be used to give the same result.

→ DROP VIEW ordered_songs;

to drop a view

GROUP BY HAVING

→ used to filter groups that we get back from group by

- Q. Select title, Avg(rating) FROM full_reviews GROUP BY title;

| title | Avg(rating) |
|----------------------|-------------|
| Archer | 8.1200 |
| Arrested Development | 8.0800 |
| Bob's Burgers | 7.5200 |
| .. | .. |
| .. | .. |

12 rows

- Q. What if we want to limit the table to a particular row
 for example only the movies having more than 3 user rating
 is this possible? (from a temporary table ??)
 ✗ WHERE clause not work here
 ✓ Yes! Having will be used

Code → Select title

```
AVG(rating),
COUNT(rating) AS review_count
FROM full_reviews
GROUP BY title HAVING COUNT(rating) > 1;
```

| title | review_count | avg(rating) |
|------------------|--------------|-------------|
| Archur | 5 | 8.12 |
| Arrested Develop | 5 | 8.08 |
| Bob's Burger | 5 | 7.52 |
| .. | .. | .. |

GROUP BY ROLLUP

With ~~without~~ rollup only works with group by

Select avg(rating) From full_reviews ;

| avg(rating) |
|-------------|
| 8.02553 |

→ ~~return~~ average ~~not~~ direct one value ~~print~~ !

Select avg(rating), title From full_reviews group by title ;

commands → select avg(rating), title from reviews
group by title;

| avg(rating) | title | individually average point कर्तव्य। |
|-------------|------------------------|---|
| 8.1200 | Archer | |
| 8.0800 | Associated Development | |
| 7.5200 | Bob's Burgers | |
| 9.3600 | Breaking Bad | |
| 8.12 | Curb Your Enthusiasm | |

Command → select title, avg(rating) FROM full-reviews
GROUP BY title WITH ROLLUP;

Output

| table ① | |
|-------------------------|---------|
| last में सबका avg. रखें | |
| NULL | 8.02553 |

Summary static/
avg. For the
whole table

Command → select count(rating);

| count(rating) | title |
|---------------|--------|
| 5 | Archer |
| .. | .. |
| .. | .. |
| | NULL |

→ 47

V.V.I

Group By Group By के साथ जो विज है उसको select के आदर रखना है।

Select released-year, genre, Avg(rating) FROM full-reviews

this GROUP BY released-year, genre with ROLLUP;
 is avg. rating for each released-year & genre combination but also for each

| released-year | genre | Avg(rating) | released year and all rows |
|---------------|--------|-------------|--|
| 1963 | DRAMA | 5.38 | → avg. rating for all g. drama in 1963 |
| 1963 | NULL | 5.38 | → avg. rating for all genre in 1963. |
| 1989 | COMEDY | 7.60 | |
| 1989 | NULL | 7.60 | |
| .. | NULL | .. | |
| NULL | NULL | 8.02553 | |

avg. for all of the ratings

Select first-name, released-year, genre, avg(rating) from
 full-reviews group by released-year, genre, first-name
 with rollup;

| first-name | released-year | genre | avg(rating) |
|------------|---------------|--------|-------------|
| oolt | 1963 | Drama | 4.50 |
| Domingo | 1963 | Drama | 5.80 |
| kimbra | 1963 | Drama | 6.80 |
| Pinkie | 1963 | Drama | 4.30 |
| ayatt | 1963 | Drama | 5.50 |
| NULL | 1963 | Drama | 5.50 |
| NULL | 1963 | NULL | 5.38 |
| Domingo | 1989 | Comedy | 7.20 |
| .. | .. | .. | .. |
| NULL | NULL | NULL | 8.02553 |

SQl MODES

These are the settings that we can turn on/off to change the behaviour and validation of MySQL.

Q. How many scopes do we have for a sql mode?

two

no spacing viewing modes

permanent

① select @@^V GLOBAL . sql-mode;

② select @@ SESSION.sql-mode;
↑ temporary

Q. How to Set the modes?

① SET GLOBAL sql-mode = 'modus';

SET SESSION sql-mode = 'modus';

ONLY-FULL-GROUP-BY, STRICT-TRANS-TABLES, NO-ZERO-IN-DATE,
ERROR-FOR-DIVISION-BY-ZERO, NO-ENGINE-SUBSTITUTION

① SELECT @@ SESSION.sql-mode;

Select 3/0;

| |
|------|
| 3/0 |
| NULL |

1 row in set, 1 warning

Show warnings

| Level | Code | Message |
|---------|------|---------------|
| Warning | 1365 | Division by 0 |

Q. How to disable all the modes?

SET SESSION sql-mode = '';

Q. How if i want to keep all modes except error for division by 0?

SET SESSION sql-mode = 'ONLY_FULL_GROUP_BY, ...

NO_ENGINE_SUBSTITUTION';

SELECT ALL EXCEPT ERROR_FOR_DIVISION_BY_ZERO

→ Query OK, 0 rows affected

Now Select 3/0;

| |
|------|
| 3/0 |
| NULL |

1 row in set



no warnings now

Show warnings;

Empty set

STRICT_TRANS_TABLE

DESC Reviews;

| Field | Type | Null | Key | Default | Extra |
|------------|--------------|------|-----|---------|----------------|
| id | int | NO | PRI | NULL | auto_increment |
| rating | decimal(2,1) | YES | | NULL | |
| snws_id | int | YES | MUL | NULL | |
| reviewn_id | int | YES | MUL | NULL | |

Q. What if insert into reviews(rating) values ('Hi');
Output → Error 1366, incorrect decimal value for column 'rating' at row 1

Q. what if STRICT_TRANS_TABLE mode is disabled?

① SET SESSION sql-mode = ' ';

SELECT @@ SESSION.sql-mode;

| @@ SESSION.sql-mode |
|---------------------|
| empty set |

empty set

Grant into reviews(rating) values ('hi');

→ query ok, now effected, warning

SELECT * FROM reviews;

| | | | |
|----|---------------------|------|------|
| 48 | 0.0 ↑ pointed | NULL | NULL |
|----|---------------------|------|------|

why our values
auto transformed
into a decimal value
=

SOME MORE SQL Modes

① ONLY-FULL-GROUP-BY

Watch the tutorial,
by colt steele

Section-16

Introducing windows functions

lets take a review of group by
 Select department, Avg(salary) FROM emps group by department;

| emp-no | department | Avg(salary) |
|--------|------------------|-------------|
| 8 | Sales | 59,000 |
| 12 | Sales | 60,000 |
| 20 | Customer Service | 56,000 |
| 21 | Customer Service | 55,000 |

Sales
group

| emp-no | department | Avg(salary) |
|--------|------------|-------------|
| 8 | Sales | 59,000 |
| 12 | Sales | 60,000 |

Customer
Service
group

| emp-no | department | Avg(salary) |
|--------|------------------|-------------|
| 20 | Customer Service | 56,000 |
| 21 | Customer Service | 55,000 |

| department | Avg(salary) |
|------------------|-------------|
| Sales | 59,500 |
| Customer Service | 55,500 |

} group by collapsed
each group of rows
into a single
result row

WINDOW Function → window function performs aggregate operations
on group of rows, but they produce a result FOR each row.

Select emp-no, department, salary, Avg(salary)

OVER (PARTITION BY department) AS dept_avg FROM emps;

| emp-no | department | salary | dept_avg |
|--------|------------------|--------|----------|
| 8 | Sales | 59,000 | 59,500 |
| 12 | Sales | 60,000 | 59,500 |
| 20 | Customer Service | 56,000 | 55,500 |
| 21 | Customer Service | 55,000 | 55,500 |

| | | | | | |
|-------------------------|----|------------------|--------|----------|--------|
| Sales window | 8 | Sales | 59,000 | dept avg | 59,500 |
| | 12 | Sales | 60,000 | | |
| customer service window | 20 | customer service | 56,000 | dept-avg | 55,500 |
| | 21 | customer service | 56,000 | | |

| emp-no | department | Salary | dept-avg' | Result for each row |
|--------|------------------|--------|-----------|---------------------|
| 20 | customer service | 56,000 | 55,500 | |
| 21 | ?? | 55,000 | 55,500 | |
| 8 | Sales | 59,000 | 59,500 | |
| 12 | Sales | 60,000 | 59,500 | |

OVER

The OVER() clause constructs a window. When its emptied the window will include all records.

→ Select * from employees;

| emp-no | department | Salary |
|--------|------------------|---------|
| 1 | engineering | 80,000 |
| 2 | ?? | 69,000 |
| 3 | ?? | 70,000 |
| 4 | ?? | 103,000 |
| 5 | ?? | 87,000 |
| 6 | ?? | 89,000 |
| 7 | sales | 91,000 |
| 8 | ?? | 59,000 |
| 9 | ?? | |
| 10 | ?? | |
| 11 | ?? | |
| 12 | ?? | |
| 13 | ?? | |
| 14 | | |
| 15 | customer service | 38,000 |
| 16 | | |
| 17 | | |
| 18 | | |
| 19 | | |
| 20 | | |
| 21 | | |

Select Avg(Salary) OVER() From employees;

| |
|--------------------|
| Avg(Salary) OVER() |
| 68428.5714 |
| " |

3 rows of employees & corresponding 3 rows
avg. show 68428.5714

7 68428.5714

21 rows (total)

① Select emp-no, department, salary, Avg(Salary) OVER() FROM employees;

only with aggregate functions

| emp-no | department | salary | Avg(Salary) OVER() |
|--------|-------------|----------|--------------------|
| 1 | engineering | 80,000 | 68,428.5714 |
| 2 | " | 69,000 | 68,428.5714 |
| 3 | " | 70,000 | 68,428.5714 |
| 4 | " | 1,03,000 | 68,428.5714 |
| 5 | " | 67,000 | " |

Ex. 2 → 2) $\text{OVER}()$
 $\text{Min}(\text{Salary})$, $\text{Max}(\text{Salary})$ $\text{OVER}()$
From employees;

| emp-no | department | salary | MIN(Salary) | MAX(Salary) | " |
|--------|-------------|--------|-------------|-------------|---|
| 1 | engineering | 80,000 | 31,000 | 159,000 | " |
| 2 | engineering | 69,000 | 31,000 | 159,000 | " |

When we not called min/max as windowed function

Select MIN(Salary), MAX(Salary) FROM employees;

| MIN(Salary) | MAX(Salary) |
|-------------|-------------|
| 31,000 | 159,000 |

PARTITION BY

Q. what if we only want the department 'Engineering' through OVER() method ?

Syntax

→ `Avg(Salary) OVER (PARTITION BY department)`

* Inside of the OVER(), use PARTITION BY to form rows into groups of row

Command → Select emp-no, department, salary, Avg(salary)
 OVER(PARTITION BY department) AS dept-avg FROM employees;

| emp-no | department | Salary | dept-avg |
|--------|------------------|--------|-------------|
| 15 | Customer Service | 38,000 | 46,571.4286 |
| 16 | Customer Service | 45,000 | 46,571.4286 |
| 17 | Customer Service | 61,000 | 46,571.4286 |
| 18 | Customer Service | 40,000 | 46,571.4286 |
| 19 | Customer Service | 31,000 | 46,571.4286 |
| 20 | Customer Service | 56,000 | 46,571.4286 |
| 21 | Customer Service | 55,000 | 46,571.4286 |
| 1 | Engineering | 80,000 | 81,285.7143 |
| 2 | " | 69,000 | 81,285.7143 |
| 3 | " | 11 | 81,285.7143 |
| 4 | " | 11 | 81,285.7143 |
| 5 | " | 11 | 81,285.7143 |

07

Select department, Avg(salary) FROM employees GROUP BY department;

| department | Avg(salary) |
|------------------|-------------|
| Engineering | 81,285.7143 |
| Sales | 77,428.5714 |
| Customer Service | 46,571.4286 |

Select emp-no, department, salary,

SUM(salary) OVER(PARTITION BY department) AS dept-payroll,

SUM(salary) OVER() AS total-payroll

FROM employees;

| emp-no | department | salary | dept-payroll | total-payroll |
|--------|------------------|--------|--------------|---------------|
| 15 | Customer Service | 38,000 | 326000 | 1437000 |
| 16 | " | 45,000 | 326000 | 1437000 |
| 17 | " | 61,000 | 326000 | 1437000 |
| 18 | " | 40,000 | 326000 | 1437000 |
| 19 | " | 31,000 | 326000 | 1437000 |
| 20 | " | 56,000 | 326000 | 1437000 |
| 21 | " | 55,000 | 326000 | 1437000 |

ORDER BY WITH WINDOWS

OVER(ORDER BY salary DESC)

use ORDER BY inside of the OVER() clause to re-order rows within each window.

Example \Rightarrow Select emp-no, department, salary

SUM(salary) OVER(PARTITION BY department ~~order by~~ ORDER BY salary

AS rolling-dept-salary

FROM employees;

SUM(salary) OVER(PARTITION BY DEPARTMENT) AS

total-dept-salary

FROM employees

| emp-no | department | salary | rolling-dept-salary | total-dept-salary |
|--------|------------------|--------|---------------------|-------------------|
| 17 | Customer Service | 61,000 | 61,000 | 326000 |
| 20 | " | 56,000 | 117000 | 326000 |
| 21 | " | 55,000 | 172000 | 326000 |
| 16 | " | 45,000 | 217000 | " |
| 18 | " | 40,000 | 257000 | " |
| 15 | " | 38,000 | 295000 | " |

| | | | | |
|---|-------------|--------|--------|--------|
| 4 | engineering | 103000 | 103000 | 569000 |
| 7 | engineering | 91000 | 194000 | " |
| 6 | engineering | 89000 | 283000 | " |
| 1 | engineering | 80000 | 363000 | " |
| 3 | engineering | 70000 | 433000 | " |
| 2 | Engineering | 69000 | 502000 | " |

Ex-2 Select emp-no, department, Salary

MIN(Salary) OVER(PARTITION BY department ORDER BY
Salary DESC) as rolling-min
FROM employees;

| emp-no | department | Salary | rolling-min |
|--------|------------------|--------|-------------|
| 17 | Customer Service | 61,600 | 61,600 |
| 20 | " | 56,000 | 56,000 |
| 21 | " | 55,000 | 55,000 |
| 4 | Engineering | 103000 | 103000 |
| 7 | " | 91000 | 91000 |
| 6 | " | 89000 | 89000 |
| 1 | " | 80000 | 80000 |

RANK()

Select emp-no, department

Salary,

RANK() OVER(ORDER BY salary DESC) as overall.

Salary-rank FROM employees;

→ Rank is only going to work with

| emp-no | department | salary | Overall-Salary-Rank |
|--------|-------------|--------|---------------------|
| 10 | Sales | 159000 | 1 |
| 4 | Engineering | 103000 | 2 |
| 7 | " | 91000 | 3 |
| 6 | " | 89000 | 4 |
| 11 | " | 80000 | 5 |
| 3 | Sales | 72000 | 6 |
| 9 | Sales | 70000 | 7 |
| 2 | Engineering | 69000 | 8 |
| 5 | Engineering | 67000 | 9 |
| .. | .. | .. | .. |

SELECT emp-no, department, salary AS dept_salary_rank
 RANK() OVER(PARTITION BY department ORDER BY salary)
 RANK() OVER(ORDER BY salary DESC) AS overall-
 salary_rank

FROM employees;

| emp-no | department | Salary | dept_salary_rank | overall_salary_rank |
|--------|------------------|--------|------------------|---------------------|
| 10 | Sales | 159000 | 1 | 1 |
| 4 | Engineering | 103000 | 1 | 2 |
| 7 | " | 91000 | 2 | 3 |
| 6 | " | 89000 | 3 | 4 |
| 11 | " | 80000 | 4 | 5 |
| 3 | Sales | 72000 | 2 | 6 |
| 9 | Engineering | 70000 | 5 | 7 |
| 2 | Sales | 69000 | 3 | 7 |
| 5 | Engineering | 67000 | 6 | 9 |
| 19 | Customer Service | 31000 | 7 | 10 |

Select
 emp-no, department, salary RANK() OVER(...),
 RANK() OVER(...) FROM employeed ORDER BY
 department;

| emp-no | department | Salary | dept-Salary-rank | overall-Salary-rank |
|--------|------------------|---------|------------------|---------------------|
| 17 | Customer Service | 81,000 | 1 | 1 |
| 20 | | 56,000 | 2 | 16 |
| 21 | | 55,000 | 3 | 17 |
| .. | .. | .. | .. | 18 |
| 4 | Engineering | 103,000 | 1 | 2 |
| 7 | | 91,000 | 2 | 3 |
| 6 | | .. | 3 | 4 |
| .. | .. | .. | .. | .. |
| 10 | Sales | 159,000 | 1 | 1 |
| 11 | Sales | 72,000 | 2 | 6 |
| 9 | Sales | 70,000 | 3 | 7 |

ROW_NUMBER

Returns the number of the current row within its partition

DENSE RANK

This rank doesn't skip any rank if there's a tie they receive from the next number.

Select
 emp-no,
 department,
 salary,
 Row Number() OVER (PARTITION BY department ORDER BY
 salary desc) as dept-row-number,
 RANK() OVER(PARTITION BY department ORDER BY salary
 DESC) as dept-Salary-rank

RANK() OVER(ORDER BY salary desc) AS overall_rank ,
 DENSE_RANK() OVER(ORDER BY salary desc) AS overall_dense_rank ,
 ROW_NUMBER() OVER(ORDER BY salary desc) AS overall_num
 FROM employees ORDER BY overall_rank ;
overall_num

| empno | department | Salary | dept-row-number | dept-salary-rank | overall-rank | overall-dense | overall-num |
|-------|------------------|--------|-----------------|------------------|--------------|---------------|-------------|
| 10 | Sales | 159000 | 1 | 1 | 1 | 1 | 1 |
| 4 | engineering | 103000 | 1 | 1 | 2 | 2 | 2 |
| 7 | " | 91000 | 2 | 2 | 3 | 3 | 3 |
| 6 | " | 89000 | 3 | 3 | 4 | 4 | 4 |
| 1 | " | 80000 | 4 | 4 | 5 | 5 | 5 |
| 11 | Sales | " | 2 | 2 | 6 | 6 | 6 |
| 3 | engineering | 701000 | 5 | 5 | 7 | 7 | 7 |
| 9 | Sales | " | 3 | 3 | 8 | 7 | 8 |
| 2 | engineering | " | 6 | 6 | 9 | 8 | 9 |
| 5 | engineering | " | 7 | 7 | 10 | 9 | 10 |
| 17 | customer service | 611000 | 4 | 4 | 11 | 10 | 11 |
| 13 | Sales | 611000 | 5 | 4 | 11 | 10 | 13 |
| 14 | Sales | 601000 | 6 | 5 | 12 | 11 | 14 |
| 12 | Sales | " | 7 | 7 | 13 | 12 | 15 |
| 8 | Sales | " | 2 | 2 | 16 | 13 | 16 |
| 20 | customer service | " | 3 | 3 | 17 | 14 | 17 |
| 21 | " | " | 4 | 4 | 18 | 15 | 18 |
| 16 | " | " | 5 | 5 | 19 | 16 | 19 |
| 18 | " | " | 6 | 6 | 20 | 17 | 20 |
| 15 | " | " | 7 | 7 | 21 | 18 | 21 |
| 19 | " | " | " | " | " | " | " |

NTILE

Divides a partition into N groups (buckets)

e.g., For example N is 4 NTILE, divides rows into four buckets.

Select

emp_no, department, salary

NTILE(4) OVER (PARTITION BY department ORDER BY salary DESC) AS dept_salary_quartile,

NTILE(4) OVER (ORDER BY salary DESC) AS salary_quartile
FROM employees;

| emp_no | department | Salary | dept_salary-quartile | salary-quartile |
|--------|------------------|--------|----------------------|-----------------|
| 10 | Sales | 159000 | 1 | 1 |
| 74 | Engineering | 103000 | 1 | 1 |
| 7 | Engineering | 91000 | 1 | 1 |
| 6 | Engineering | 89000 | 2 | 1 |
| 1 | Engineering | 80000 | 2 | 1 |
| 11 | Sales | 72000 | 1 | 1 |
| 3 | Engineering | 70000 | 3 | 2 |
| 9 | Sales | 70000 | 2 | 2 |
| 2 | Engineering | 69000 | 3 | 2 |
| 5 | Engineering | 67000 | 4 | 2 |
| 17 | Customer Service | 61000 | 1 | 2 |
| 13 | Sales | 61000 | 1 | 2 |
| 14 | Sales | 61000 | 2 | 3 |
| 12 | Sales | 60000 | 3 | 3 |
| 8 | Sales | 59000 | 3 | 3 |

FIRST - VALUE

Select emp-no, department, salary

FIRST_VALUE (emp-no) OVER (PARTITION BY department ORDER BY salary DESC) AS highest-paid-dept)

FIRST_VALUE (emp-no) OVER (ORDER BY salary DESC) AS highest-paid-overall

FROM employees;

| emp_no | department | salary | highest-paid-dept | highest-paid-overall |
|--------|------------------|--------|-------------------|----------------------|
| 10 | Sales | 159000 | 10 | 10 |
| 4 | engineering | 103000 | 4 | 10 |
| 7 | " | 91000 | 4 | 10 |
| 6 | " | 89000 | 4 | 10 |
| 1 | " | 80000 | 4 | 10 |
| 11 | Sales | 72000 | 10 | 10 |
| 3 | engineering | 70000 | 4 | 10 |
| 9 | Sales | 70000 | 10 | 10 |
| 2 | engineering | 69000 | 4 | 10 |
| 5 | " | 67000 | 4 | 10 |
| 17 | Customer Service | 61000 | 17 | 10 |
| 13 | Sales | 61000 | 10 | 10 |
| 14 | " | 61000 | 10 | 10 |
| 12 | " | 61000 | 10 | 10 |
| 8 | " | 61000 | 10 | 10 |

LEAD / LAG

For comparison
w/o next row

① Select emp-no, department, salary,

LAG (salary) OVER (ORDER BY salary DESC)
FROM employees;

| emp-no | department | salary | LAG(salary) OVER(ORDER By salary DESC) |
|--------|-------------|--------|--|
| 10 | Sales | 159000 | NULL |
| 4 | engineering | 103000 | 159000 ← Previous value |
| 7 | " | 91000 | 103000 |
| 6 | " | 89000 | 91000 |
| 1 | " | 80000 | 89000. |

we can calculate the difference

②

Select ..

Salary - LAG(salary) over (..) as salary-diff
From employees;

| emp-no | department | salary | salary diff |
|--------|-------------|----------|-------------|
| 10 | Sales | 159000 ② | NULL ✓ 1-2 |
| 4 | engineering | 103000 ① | -56000 |
| 7 | " | 91000 | -12000 |
| 6 | " | 89000 | -2000 |
| 1 | " | 80000 | -9000 |
| 11 | Sales | 72000 | -8000 |

③

Select ..

Salary - LEAD(salary) .. FROM employees;

| emp-no | department | salary | salary-diff |
|--------|-------------|---------|-------------|
| 10 | Sales | 1159000 | 56000 ① - ② |
| 4 | engineering | 103000 | 12000 |
| 7 | " | 91000 | 2000 |
| 6 | " | 89000 | 9000 |
| 1 | " | 72000 | 8000 |
| 11 | Sales | 70000 | 2000 |

④ Select emp-no, department, salary,

Salary - LAG(salary) OVER (PARTITION BY department ORDER

By salary DESC) AS dept-salary-diff FROM employees;

| emp-no | department | salary | dept-salary-diff |
|--------|------------------|--------|------------------|
| 17 | Customer service | 61000 | NULL |
| 20 | " | 56000 | -5000 |
| 21 | " | 55000 | -1000 |
| 16 | " | 45000 | -10500 |
| 4 | engineering | 103000 | NULL |
| 7 | " | 91000 | -12000 |
| 6 | " | 89000 | -2000 |

Section-17

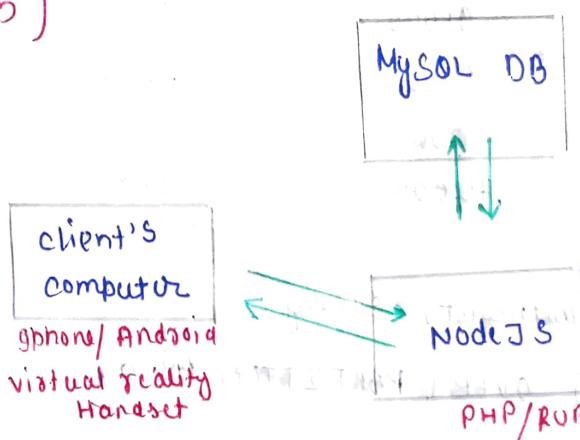
Section-18

gg data-clone

(Section-35)

Practise

→ MySQL and Node.js



Q. What is node ?

node is javascript it uses exact same syntax but it can be used on backend for

✓ mysql-ctl start

✓ mysql-ctl stop

* mysql-ctl cli ✓

skip the password

to run
mysql
file in terminal
Source Filenam.e.sql
↳

to print Hello world?

① console.log('Hello world');
↳ to print Hello world

② for (var i=0 ; i<500 ; i++)
 { console.log('Hello world'); }

③ console.log(5+5);

output → 10

groom.io

Username →

8Nivam18b132@gmail.com

ls / cd

Root user : root

Database name: mysql

Power

BI.