

Agenda

1. Window Functions

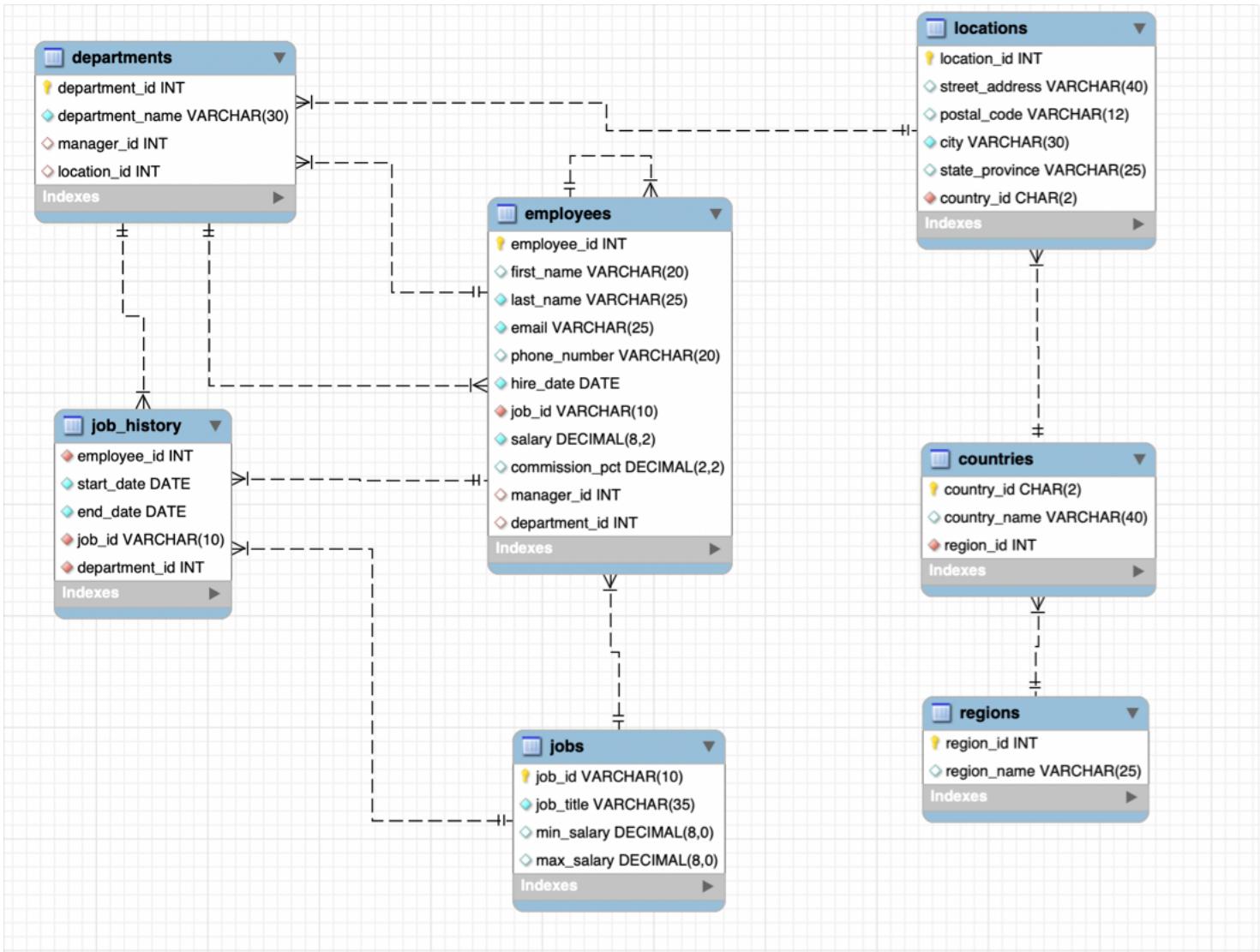
1. Aggregation Types

1. Sum ✓
2. Min ✓
3. Max ✓
4. Count ✓
5. Average ✓

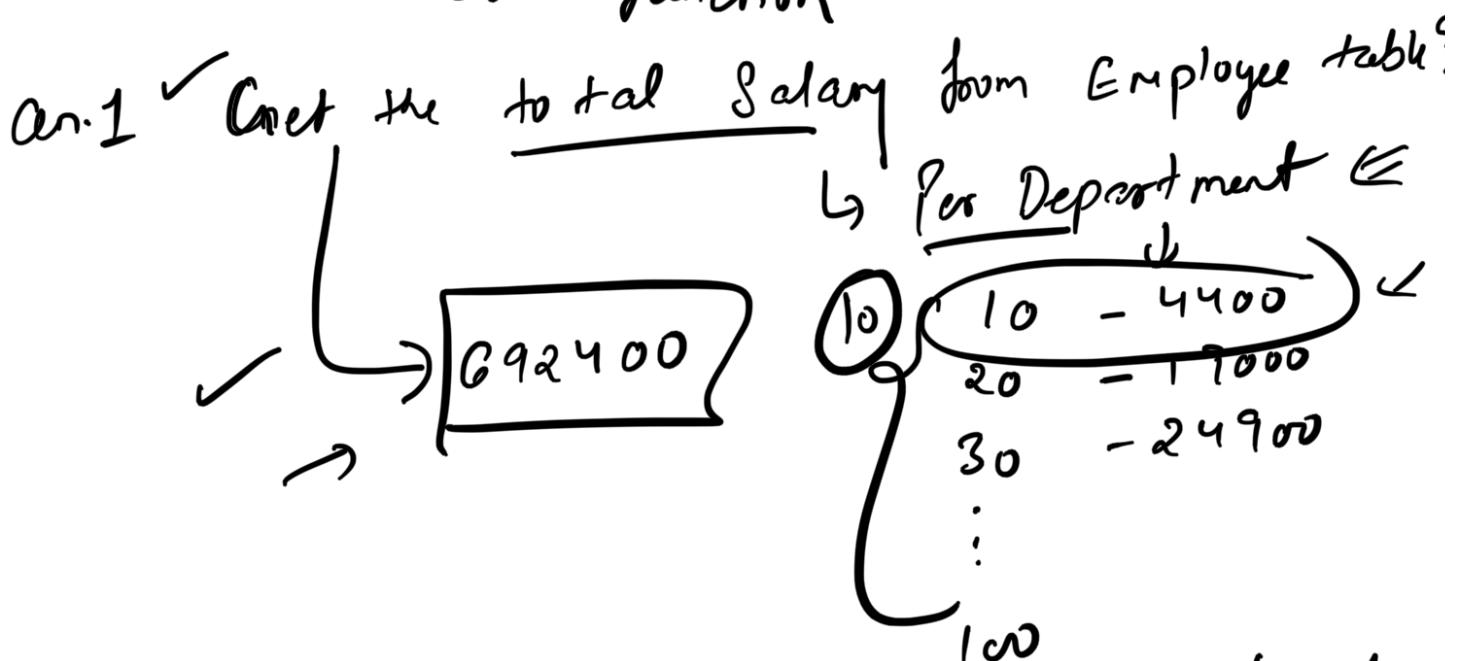
2. Analytical Types

1. row number ✓
2. rank ✓
3. dense rank ✓
4. lead,lag
5. ntile
6. nth_value, first_value, last_value

3. Date and Time Functions



Window function



② → Get the total salary per Department wise and into same ^{row} _{Salary}.

1	10	1000	4400
2	10	2000	4400
3	10	1000	4400
4	10	4000	4400

③ → Subquery + Group By ↲

④ → Self Join + Group By ↲

① Window function ↲

→ 2 × Subquery ↲
 → 1.5 × Joins ↲

① Aggregation functions

$\text{Sum} / \text{Avg} / \text{Count} / \text{Min} / \text{Max}$

Date

Partition by employee

① A
② B

① A
② B

① A
② B

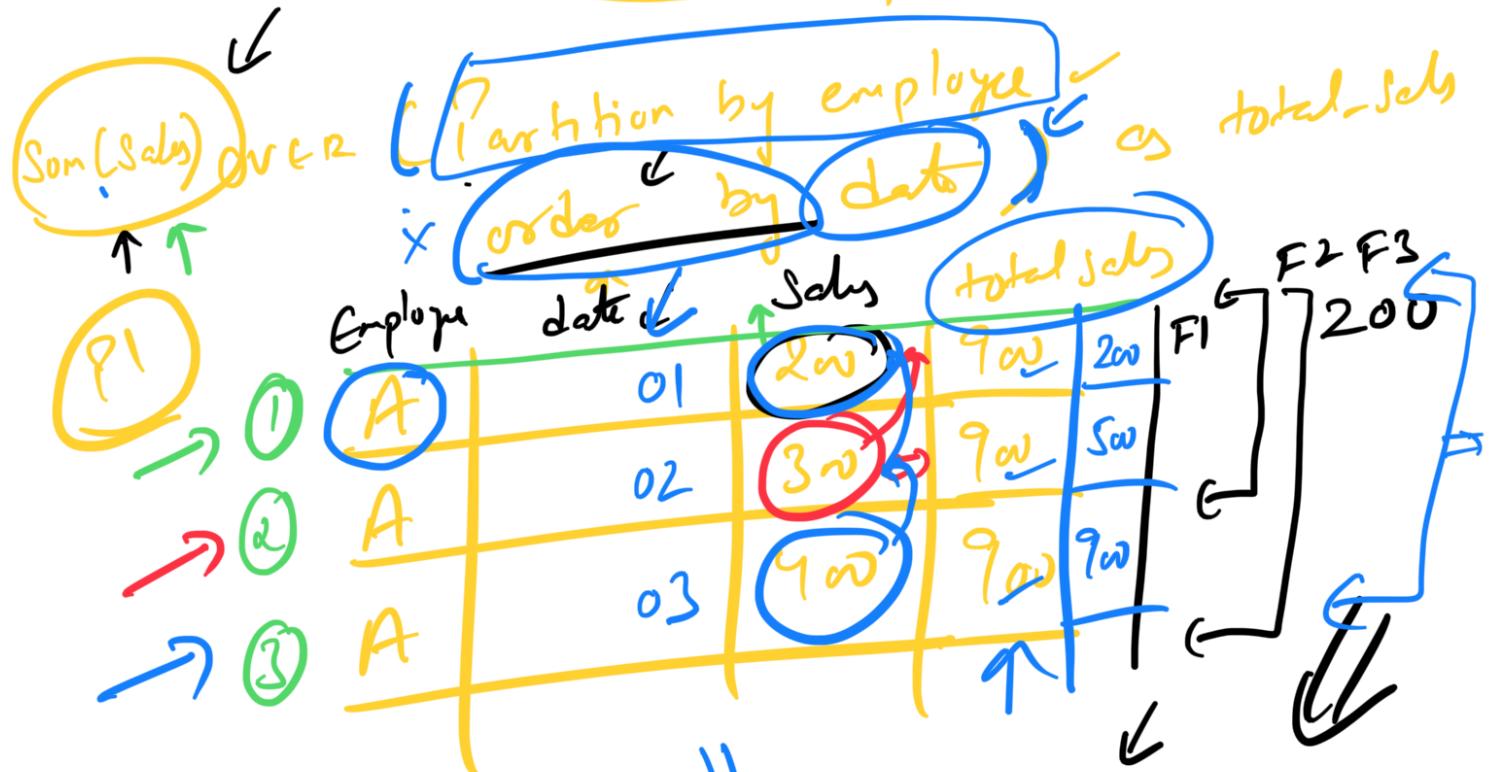
Sales		date	Sale	Total-Sale
employees		01/03	200-	900
	A	01/03	400-	1200
	B	01/04	300-	900
	A	01/04	300	1200
	B	01/05	400-	900
	A	01/05	500	1200
	B	01/05		

① Get the total Sales across tabu

OVER()

Select
 EMP-ID, Sales, date,
Sum(Sale) OVER () AS total-Sales
 From Sales;

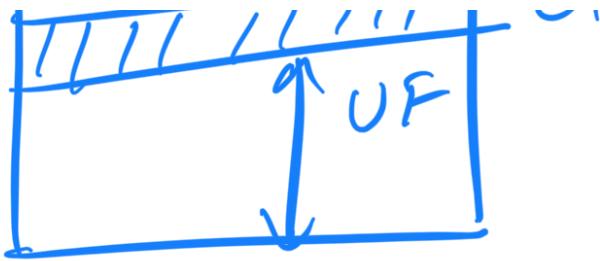
→ OVER (partition by employee); @ Partition by
 → ORDER BY → W1 ② Order by



Frames Range between unbounded preceding and Current Row

$$\begin{aligned} \rightarrow UP = 0, 200 &\Rightarrow \text{Sum}(\text{Sal}) \Rightarrow 200 \\ \rightarrow UP = 200, 300 &\Rightarrow \text{Sum}(\text{Sal}) \Rightarrow 500 \\ &\Rightarrow \text{Sum}(\text{Sal}) = 900 \end{aligned}$$





Sum(Sales) over (Partition by emp order by sale)

Range between ↑ 2 Preceding and ↓ 1 Following

Emp	Sale	Date	total_sals
A	400	01	500
B	500	01	
A	300	02	
A	200	02	
A	450	03	
B	300	03	
A	200	04	

A	200	04
A	300	02
A	400	01
A	450	03

Sales = $P = 500 \quad F = 450 \quad CR = 400 \Rightarrow \underline{1350}$

RANGE → date

Sum(Sale) < over (order by date)

Range between UF and CR

ROWS

A	200	01
B	500	01
A	300	02
A	400	03

→ 700
700

→ 1000

→ 1400 → Row

→ 200
700
700
1000 → 1400

140611

302 n

Analytical functions

① Row-number

\Rightarrow FB dept_id
order by salary

A	400	10	100
B	300	300	300
C	200	400	600
D	600	800	800
E	800	1800	1800
F	200	600	600
G	400	400	400

② Rank

rank(1)
over
(P B dept_id
order by salary
desc)

	Salary	row-number	Rank	Dense-Rank
A	4800	1	1	1
B	4800	2	1	1
C	4800	3	1	1
D	5000	4	4	2
E	5000	5	5	3
F	5500	6	5	3
G	6000	7	7	4

③ Dense-Rank

1	3
2	0

player-id	Winning	Streak	match-day	result	Tnk	Score
13	W	1	13	L	1	1
14	L	1	14	L	2	2

3 2

rank()
over CPD pidst
or as by rank 2nd

rank()
over CPD pidst
or 2nd by rank 2nd

1	17	-D	w	3	3
1	16	(3)	L	1	4
1	18	D	w	4	5
1	20	0	L	1	1
2	18	0	D	2	2
G	19	0	0	1	1
2	18	0	w	2	2
3	21	0	w	1	1
3	22	2	L	1	3
3	23	2	L	2	4

G1

man(dN)

G2

new(dN)

Group by P.i.

L

W

1 2 3 4 5 6 7 8 9

diff cur

G1 X

N^{th} -function | NM-value

and without salary?

Qn. Dept wide $2^n = \text{range}$
 ⇒ Show the name of Person having 2^{nd} highest
 salary across the table?

Q1 {
 UP/CR

A	101	AD	200	A
D	102	AD	400	A
C	103	AD	150	A
D	104	IT	200	E

n^{th} -value Name ↓
 over CPB dept id,
 OR salary due
 Range b/w UP ↑
 and CR

Row ↓
 UP
 UF → 0' → 200 150
 L
 1=2
 1F
 UP
 2F

102	AD	400	A
101	AD	200	F
103	AD	150	A

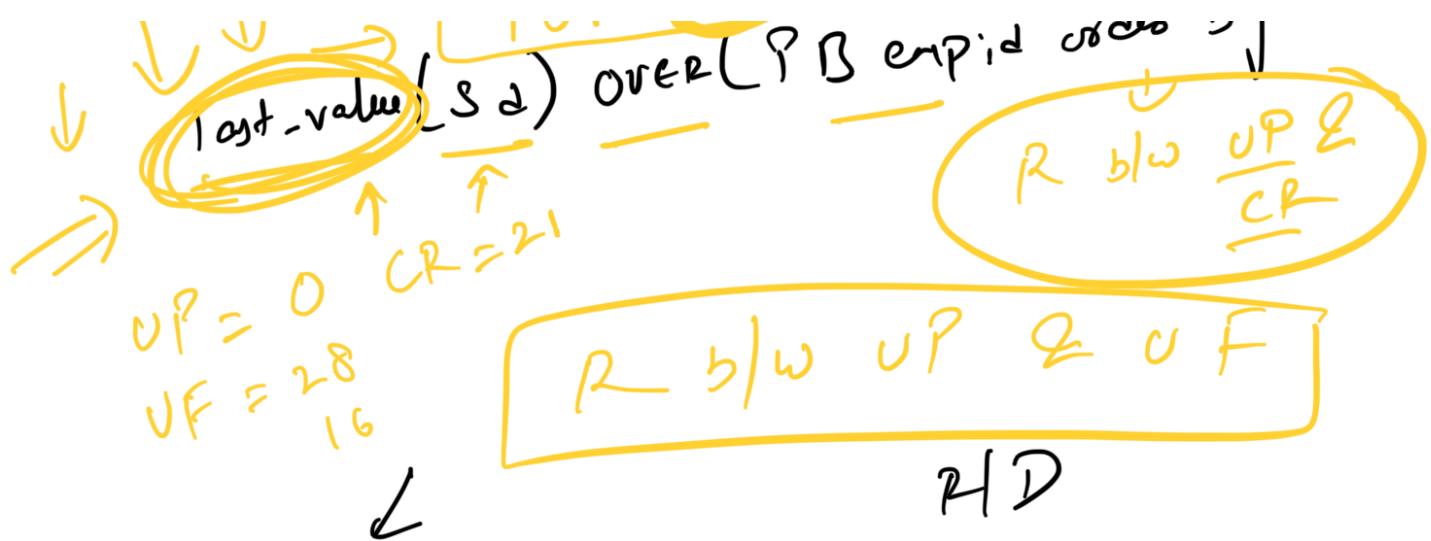
$$\begin{aligned} UP &= 0, 400 \\ UP &= \frac{400, 200}{1, 2} \\ UP &= 400, 200 \\ CR &= 150 \end{aligned}$$

1 UF

- ① First-value(Sd) → 1
- ② Last-value(Sd) → Last

Output

job	name	date	age	dept
101	Neena	21/01/1989	28	IT
101	Neena	28/10/1993	28	IT
101		21	27	Acc
101		28	15	MGR
101		16	30	HR



Lag and lead wr 1, 2, 3, 4
 ① \hookrightarrow lag (col, 1, 0)
 ② \hookrightarrow lead (col, 1, 0)

eid	ename	sal	Dept	Hire-date
1	A -	700	IT	01/2/98
2	(B) -	600	IT	11/3/98
3	C -	900	IT	12/3/98
4	D -	1200	IT	14/4/20
5	E	200	AD	1 Mar 87
6	F	300	AD	10 May 88
7	G	400	AD	1 Jun 89

Total * . 1

Lead(Salary, 1,0) as Peer-Salary
OVER(PB Dept_id order by Salary)
as Peer-Salary

Date and time functions

→ Datetime - demo

101 | Feb [2023]

→ 9:00 AM

↓ 04:00pm

9:00 AM

Count(α)

Date - add (Date, Interval 30 mins) : → 9:00
9:30

Date - Sub

→ 9:00
9:30
—————
→ 08:00
—————
08:30

A hand-drawn diagram of a simple pendulum. A horizontal line extends from the right towards the left. At the right end, there is a small circle labeled 'R'. A vertical line segment hangs from the horizontal line, representing the string of the pendulum. At the bottom of this vertical line, there is a circle labeled 'D'. To the left of the vertical line, there is another circle labeled 'B' with a curved arrow pointing towards it from the left, indicating the direction of motion or force.

(2)

Л и ю

D D DD

H Bon

1

