GROUP FUNCTIONS

GROUP FUNCTIONS

- DEFINE AND SHOW EXAMPLES OF THE USE OF GROUP FUNCTIONS:
  - SUM, AVG, COUNT, MIN, MAX, STDDEV, AND VARIANCE
- WRITE SQL QUERY USING GROUP FUNCTIONS

GROUP FUNCTIONS

- IN SQL GROUP FUNCTIONS CAN OPERATE ON A WHOLE TABLE OR A GROUP OF ROWS
- EACH FUNCTION RETURNS JUST ONE RESULT

GROUP FUNCTIONS

- MIN: USED ON ANY DATA TYPE TO RETURN THE MINIMUM VALUE
- MAX: USED ON ANY DATA TYPE TO RETURN THE MAXIMUM VALUE

SAL
5000
2850
2450
2975
3000
3000
800

SELECT MIN(sal)
FROM emp;

MIN(SAL)
800

GROUP FUNCTIONS

- SUM: USED ON NUMERIC DATA TO FIND THE TOTAL OR SUM OF VALUES
- AVG: USED ON NUMERIC DATA TO FIND THE AVERAGE

SAL
5000
2850
2450
2975
3000
3000
800

SELECT SUM(sal)
FROM emp;

SUM(SAL)
29025

GROUP FUNCTIONS

- COUNT: RETURNS THE NUMBER OF ROWS
- VARIANCE: USED ON NUMERIC DATA TO CALCULATE THE SPREAD OF DATA AROUND THE MEAN
- STDDEV: USED ON NUMERIC DATA TO CALCULATE THE SPREAD OF DATA AROUND THE MEAN

GROUP FUNCTIONS

- GROUP FUNCTIONS ARE WRITTEN IN THE SELECT CLAUSE
- THEY CANNOT BE WRITTEN IN THE WHERE CLAUSE

```
SELECT LAST_NAME, FIRST_NAME
FROM EMP
WHERE SAL= MIN(SALARY);
```

GROUP FUNCTIONS

- MIN USED WITH ANY DATA TYPE

Examples:	Result

`SELECT MIN(life_expect_at_birth)`
`  AS "Lowest Life Exp"`
`FROM wf_countries;`
	32.62

`SELECT MIN(country_name)` `FROM wf_countries;`	Anguilla
`SELECT MIN(hire_date)` `FROM employees;`	17-Jun-1987

GROUP FUNCTIONS

- MAX USED ON ANY DATA TYPE

Examples:	Result

`SELECT MAX(life_expect_at_birth)`
`  AS "Highest Life Exp"`
`FROM wf_countries;`
	83.51

`SELECT MAX(country_name)` `FROM wf_countries`	Western Sahara
`SELECT MAX(hire_date)` `FROM employees;`	29-Jan-2000

GROUP FUNCTIONS

- SUM USED ON NUMERIC DATA

Examples:	Result

`SELECT SUM(area)`
`FROM wf_countries`
`WHERE region_id = 29;`
	241424

`SELECT SUM(salary)`
`FROM employees`
`WHERE department_id = 90;`
	58000

GROUP FUNCTIONS

- AVG USED ON NUMERIC DATA

Examples:	Result

`SELECT AVG(area)`
`FROM wf_countries`
`WHERE region_id = 29;`
	9656.96

`SELECT ROUND(AVG(salary), 2)`
`FROM employees`
`WHERE department_id = 90;`
	19333.33

GROUP FUNCTIONS

- GROUP FUNCTIONS IGNORE NULL VALUES

```
SELECT AVG(COMMISSION_PCT)
FROM EMP;
```

AVG(COMMISSION_PCT)
.2125

LAST_NAME	COMMISSION_PCT
King	-
Kochhar	-
De Haan	-
Whalen	-
Higgins	-
Gietz	-
Zlotkey	.2
Abel	.3
Taylor	.2
Grant	.15
Mourgos	-
...	...

GROUP FUNCTIONS

- YOU CAN HAVE MORE THAN ONE GROUP FUNCTION IN THE SELECT CLAUSE, ON THE SAME OR DIFFERENT COLUMNS

```
SELECT MAX(SAL), MIN(SAL), MIN(EMP_ID)
FROM EMP;
```

MAX(SALARY)	MIN(SALARY)	MIN(EMPLOYEE_ID)
9000	4200	103

GROUP FUNCTIONS

- COUNT RETURNS THE NUMBER OF NON-NULL VALUES IN THE COLUMN

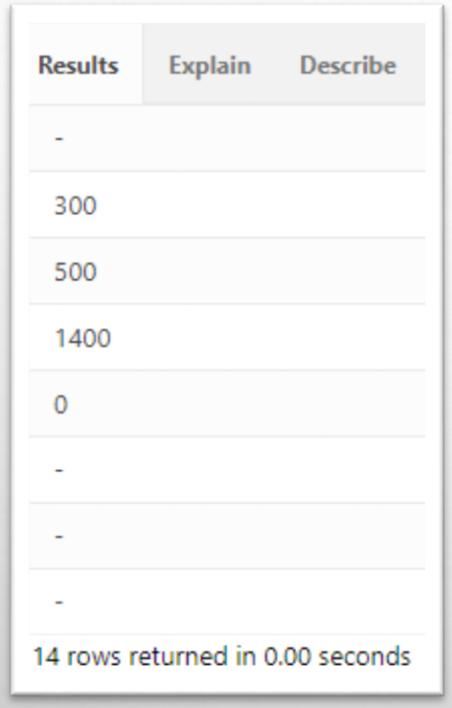
```
SELECT COUNT(JOB_ID)
FROM EMP;
```

COUNT(JOB_ID)
20

GROUP FUNCTIONS

- 14 ROWS IN THE EMP TABLE

```
SELECT COMM
FROM EMP;
```

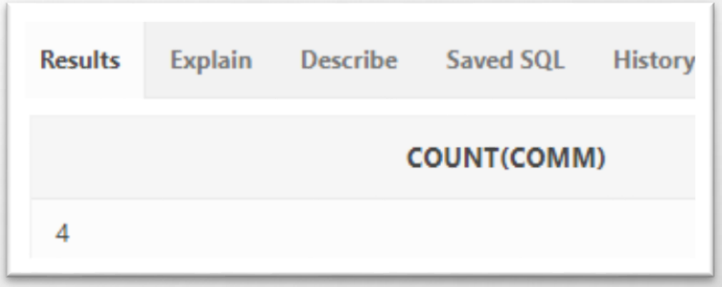


Results	Explain	Describe
-		
300		
500		
1400		
0		
-		
-		
-		

14 rows returned in 0.00 seconds

- ADDING THE COUNT FUNCTION RETURNED 4

```
SELECT COUNT(COMM)
FROM EMP;
```



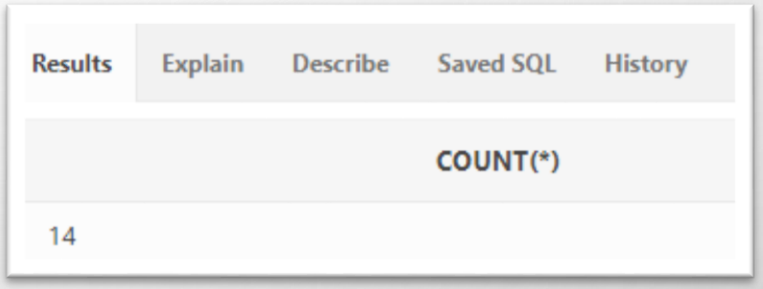
Results	Explain	Describe	Saved SQL	History
			COUNT(COMM)	
4				

NULL VALUES IGNORED

GROUP FUNCTIONS

- COUNT(*) RETURNS A COUNT OF ALL ROWS IN A TABLE

```
SELECT COUNT(*)
FROM EMP
WHERE HIREDATE < '01-01-1998';
```



- WE USE COUNT WHEN WE WANT TO COUNT ALL ROWS EVEN THOSE THAT HAVE NULLS

GROUP FUNCTIONS

- SOMETIMES YOU WANT TO INCLUDE NULL VALUES IN GROUP FUNCTIONS

```
SELECT AVG(NVL(COMM,0))
FROM EMP;
```