

MULTI ROW OR GROUP FUNCTIONS IN SQL

Group functions, sometimes-called aggregate functions, return a value based on a number of inputs. The exact number of input is not determined until the query is executed and all rows are fetched. This differs from single-row functions, in which the number of inputs is known at parse time before the query is executed. Because of this difference, group functions have slightly different requirements and behavior from single-row functions. Group functions do not process NULL values and do not return a NULL value.

Aggregate Functions

The aggregate functions produce a single value for an entire group or table.

Aggregate Functions	Description
COUNT	Determine the number of rows or non NULL column values
SUM	Determines the sum of all selected columns
MAX	Determines the largest of all selected values of a column
MIN	Determines the smallest of all selected values of a column
AVG	Determines the average of all selected values of a column

NOTE: In all the above functions, NULLs are ignored.

Aggregate functions are used to produce summarized results. They operate on sets of rows. They return results based on groups of rows. By default all rows in a table are treated as one group. The GROUP BY clause of the SELECT statement is used to divide rows into smaller groups (discussed in next section).

COUNT

Count function determines the number of rows or non-NULL column values.

The syntax is

COUNT (* [Distinct] ALL column name)

If * is passed, then the total number of rows is returned.

Examples:

- List the number of employees working with the company:

```
SQL>Select COUNT(*) FROM emp;
```

OUTPUT:

```
          COUNT(*)
          -----
             14
```

- List the number of jobs available in the emp table.

```
SQL>SELECT COUNT (DISTINCT JOB) FROM emp;
```

OUTPUT:

```
          COUNT(DISTINCTJOB)
          -----
             5
```

With the COUNT function, a column name can also be specified. In this case, the NULL values will be ignored.

SUM

The sum function returns the sum of values for the selected list of columns.

The syntax is

```
SUM([DISTINCT|ALL] column name)
```

Example

- List the total salaries payable to employees.

```
SQL>SELECT SUM(sal) FROM emp;
```

OUTPUT:

```
          SUM(SAL)
          -----
         29025
```

MAX

Max function returns the maximum value of the selected list of item. Note that DISTINCT and ALL have no effect, since the maximum value would be same in either case.

The syntax is:

```
MAX(column name)
```

- List the maximum salary of employee working as a salesman.

```
SQL>SELECT MAX(sal) FROM emp WHERE job='SALESMAN';
```

OUTPUT:

```
MAX(SAL)
-----
1600
```

MIN

This function returns the minimum value of the selected list of items.

The syntax is

```
MIN(Column name)
```

Example

- List the minimum salary from emp table.

```
SQL>SELECT MIN(sal) FROM emp;
```

OUTPUT:

```
MIN(SAL)
-----
800
```

AVG

This function returns the average of column values.

The syntax is:

```
AVG(DISTINCT|ALL] Column name)
```

Example

- List the average salary and number of employees working in the department 20.

```
SQL>SELECT AVG(sal), COUNT(*) FROM emp WHERE deptno=20;
```

OUTPUT:

AVG(SAL)	COUNT(*)
2175	5
