

Database Programming with SQL 8-1: Group Functions

Practice Activities

# Objectives

* Define and give an example of the seven group functions: SUM, AVG, COUNT, MIN, MAX, STDDEV, VARIANCE
* Construct and execute a SQL query using group functions
* Construct and execute group functions that operate only with numeric data types

# Vocabulary

Identify the vocabulary word for each definition below.

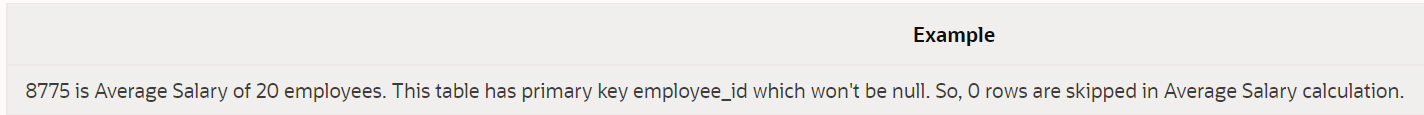
|  |  |
| --- | --- |
| **AVG** | Calculates average value excluding nulls |
| **COUNT** | Returns the number of rows with non-null values for the expression |
| **STDDEV** | For two sets of data with approximately the same mean, the greater the spread, the greater the standard deviation. |
| **ANY** | Operate on sets of rows to give one result per group |
| **MIN** | Returns minimum value ignoring nulls |
| **VARIANCE** | Used with columns that store numeric data to calculate the spread of data around the mean |
| **SUM** | Calculates the sum ignoring null values |
| **MAX** | Returns the maximum value ignoring nulls |
| **Aggregate** | To gather into a sum or whole |

# Try It / Solve It

1. Define and give an example of the seven group functions: AVG, COUNT, MAX, MIN, STDDEV, SUM, and VARIANCE.

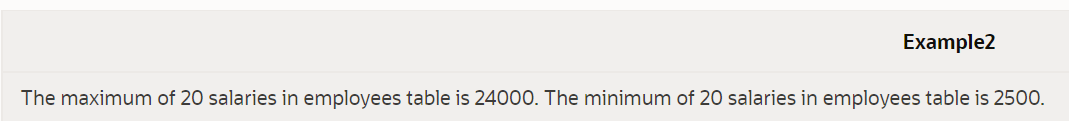
**SELECT AVG(salary) || ' is Average Salary of ' || COUNT(salary) || ' employees. This table has primary key employee\_id which won''t be null. So, ' || (COUNT(employee\_id) - COUNT(salary)) || ' rows are skipped in Average Salary calculation.' "Example"**

**FROM EMPLOYEES;**

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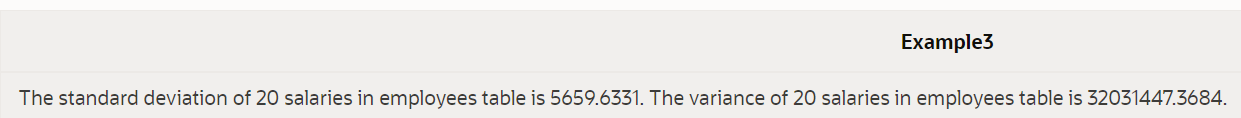
**SELECT 'The maximum of ' || COUNT(salary) || ' salaries in employees table is ' || MAX(salary) ||'. The minimum of '|| COUNT(salary) || ' salaries in employees table is '|| MIN(salary) ||'.' "Example2"**

**FROM EMPLOYEES;**

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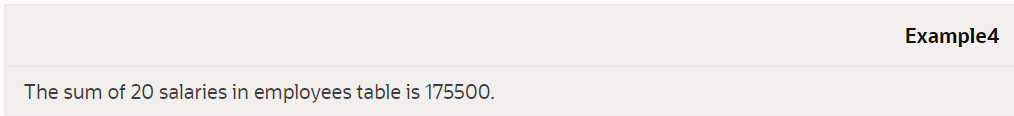
**SELECT 'The standard deviation of ' || COUNT(salary) || ' salaries in employees table is ' || ROUND(STDDEV(salary), 4) ||'. The variance of '|| COUNT(salary) || ' salaries in employees table is '|| ROUND(VARIANCE(salary), 4) ||'.' "Example3"**

**FROM EMPLOYEES;**

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**SELECT 'The sum of ' || COUNT(salary) || ' salaries in employees table is ' || SUM(salary) ||'.' "Example4"**

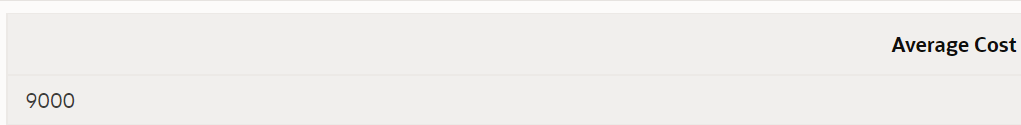
**FROM EMPLOYEES;**

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1. Create a query that will show the average cost of the DJs on Demand events. Round to two decimal places.

**SELECT ROUND(AVG(cost),2) as "Average Cost"**

**FROM d\_events;**



1. Find the average salary for Global Fast Foods staff members whose manager ID is 19.

**SELECT TO\_CHAR(ROUND(AVG(salary),2), '$999999.99') as "Average Salary"**

**FROM f\_staffs**

**WHERE manager\_id = 19;**

****

1. Find the sum of the salaries for Global Fast Foods staff members whose IDs are 12 and 9.

**SELECT TO\_CHAR(ROUND(SUM(salary),2), '$999999.99') as "Total Salary"**

**FROM f\_staffs**

**WHERE id in (12, 19);**

**Изображение выглядит как стол

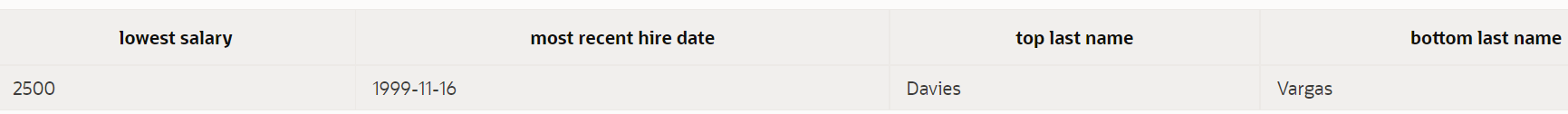
Автоматически созданное описание**

1. Using the Oracle database, select the lowest salary, the most recent hire date, the last name of the person who is at the top of an alphabetical list of employees, and the last name of the person who is at the bottom of an alphabetical list of employees. Select only employees who are in departments 50 or 60.

**SELECT MIN(salary) "lowest salary", MAX(hire\_date) "most recent hire date", MIN(last\_name) "top last name", MAX(last\_name) "bottom last name"**

**FROM employees**

**WHERE department\_id in (50, 60);**

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1. Your new Internet business has had a good year financially. You have had 1,289 orders this year. Your customer order table has a column named total\_sales. If you submit the following query, how many rows will be returned?

SELECT sum(total\_sales) FROM orders;

**Одна**

1. You were asked to create a report of the average salaries for all employees in each division of the company. Some employees in your company are paid hourly instead of by salary. When you ran the report, it seemed as though the averages were not what you expected—they were much higher than you thought! What could have been the cause?

**SELECT AVG(NVL(salary, hourly\_rate\* hrs\_worked\_in\_yr  ))**

**This way the null fields beings ignored will also be counted in.**

1. Employees of Global Fast Foods have birth dates of July 1, 1980, March 19, 1979, and March 30, 1969. If you select MIN(birthdate), which date will be returned?

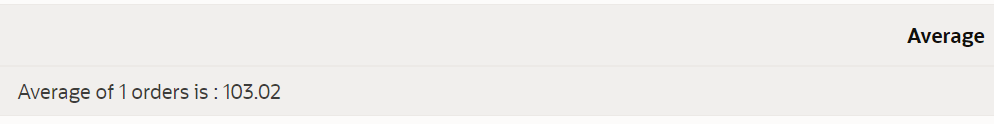
**March 30, 1969**

1. Create a query that will return the average order total for all Global Fast Foods orders from January 1, 2002, to December 21, 2002.

**SELECT 'Average of ' || COUNT(order\_number) || ' orders is : ' || AVG(NVL(order\_total, 0)) as "Average"**

**FROM f\_orders**

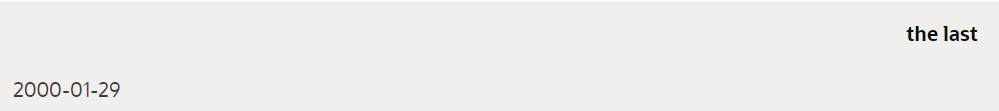
**WHERE order\_date BETWEEN TO\_DATE('January 1, 2002', 'fmMonth DD, YYYY') AND TO\_DATE('December 21, 2002', 'fmMonth DD, YYYY');**

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1. What was the hire date of the last Oracle employee hired?

**SELECT MAX(hire\_date) as "the last"**

**FROM employees;**

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1. In the following SELECT clause, which value returned by the SELECT statement will be larger?

SELECT SUM(operating\_cost), AVG(operating\_cost)

**SUM must be  be ‘equal or greater than’ average.**

1. Refer to the DJs on Demand database D\_EVENTS table:

Which code is valid as part of an SQL query?

a. FROM event\_date

**b. SELECT SUM(cost)**

c. SELECT SUM(event\_date)

d. SELECT AVG(cost) AS "Expense"

e. WHERE MIN(id) = 100

f. SELECT MAX(AVG(cost))

**g. SELECT MIN(event\_date)**