

```
SELECT department_id, AVG(salary) FROM employees GROUP BY department_id  
HAVING max(salary)>10000;
```

Example displays the job ID and total monthly salary for each job that has a total payroll exceeding \$13,000. The example excludes sales representatives and sorts the list by the total monthly salary.

```
SELECT job_id, SUM(salary) PAYROLL FROM employees WHERE job_id NOT LIKE  
'%REP%'  
GROUP BY job_id HAVING SUM(salary) > 13000 ORDER BY SUM(salary);
```

Nesting Group Functions

Display the maximum average salary:

Group functions can be nested to a depth of two. The slide example displays the maximum average salary.

```
SELECT MAX(AVG(salary)) FROM employees GROUP BY department_id;
```

Summary

In this exercise, students should have learned how to:

- Use the group functions COUNT, MAX, MIN, and AVG
- Write queries that use the GROUP BY clause
- Write queries that use the HAVING clause

```
SELECT column, group_function
```

```
FROM table
```

```
[WHERE condition]
```

```
[GROUP BY group_by_expression]
```

```
[HAVING group_condition]
```

```
[ORDER BY column];
```

Find the Solution for the following:

Determine the validity of the following three statements. Circle either True or False.

1. Group functions work across many rows to produce one result per group.

True/False *True*

2. Group functions include nulls in calculations.

True/False *False*

3. The WHERE clause restricts rows prior to inclusion in a group calculation.

True/False *True*

The HR department needs the following reports:

4. Find the highest, lowest, sum, and average salary of all employees. Label the columns Maximum, Minimum, Sum, and Average, respectively. Round your results to the nearest whole number

```
select ROUND(MAX(salary)) As Maximum,  
ROUND(MIN(salary)) As Minimum,  
ROUND(SUM(salary)) As Sum,  
ROUND(AVG(salary)) As Average  
From employees;
```

5. Modify the above query to display the minimum, maximum, sum, and average salary for each job type.

```
select job_id, MIN(salary) as min-salary, MAX(salary)  
as max-salary, SUM(salary) as total-salary, AVG  
(salary) as avg-salary from employees group by job_id;
```

6. Write a query to display the number of people with the same job. Generalize the query so that the user in the HR department is prompted for a job title.

```
select job_id, count(*) as num-employees from  
employees where job_id = upper('<job-title>') group  
by job_id;
```

7. Determine the number of managers without listing them. Label the column Number of Managers. Hint: Use the MANAGER_ID column to determine the number of managers.

```
select count(DISTINCT manager_id) as number-of-  
Managers from employees where manager_id  
is not NULL;
```

8. Find the difference between the highest and lowest salaries. Label the column DIFFERENCE.

```
select (MAX(salary) - MIN(salary)) as difference  
from employees;
```

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9. Create a report to display the manager number and the salary of the lowest-paid employee for that manager. Exclude anyone whose manager is not known. Exclude any groups where the minimum salary is \$6,000 or less. Sort the output in descending order of salary.

```
select manager_id, MIN(salary) as lowest-salary  
from employees where manager_id is not NULL group  
by manager_id having MIN(salary) > 6000 order by  
lowest-salary by DESC;
```

10. Create a query to display the total number of employees and, of that total, the number of employees hired in 1995, 1996, 1997, and 1998. Create appropriate column headings.

```
select count(*) as total-employees, sum(case when year  
(hire-date) = 1995 then 1 else 0 end) as hired-1995,  
sum(case when year(hire-date) = 1996, then 1 else 0 end)  
1997 then 1 else 0 end as hired-1997, sum(case when  
year(hire-date) = 1998 then 1 else 0 end) as hired-  
1998 from employees;
```

11. Create a matrix query to display the job, the salary for that job based on department number, and the total salary for that job, for departments 20, 50, 80, and 90, giving each column an appropriate heading.

select job-id as Job, sum(case when department-id=20
then salary END) as Dept 20 from employee where
department-id in (20, 50, 80, 90) group by job-id
order by job-id;

12. Write a query to display each department's name, location, number of employees, and the average salary for all the employees in that department. Label the column name-Location, Number of people, and salary respectively. Round the average salary to two decimal places.

select d.department-name as Dept, l.city as Location
count(e.empLOYEE-ID) as number-of-employees,
round(AVG(e.salary), 2) as Average-Salary
from employee e join department d on e.department-
id = d.department-id join locations l on d-
location-id = l.location-id group by d.department-
name order by d.department-name;

Evaluation Procedure	Marks awarded
Query(5)	5
Execution (5)	5
Viva(5)	5
Total (15)	15
Faculty Signature	RJM 8/9/25

Practice Questions

Date Functions

1. For DJs on Demand, display the number of months between the event_date of the Vigil wedding and today's date. Round to the nearest month.

Select DATE_FORMAT(CURDATE(), '%Y-%m-%d')
as "Today";

2. Display the days between the start of last summer's school vacation break and the day school started this year. Assume 30.5 days per month. Name the output "Days."

Select DATE_FORMAT(CURDATE(), '%Y-%m-%d')
as "Today";

3. Display the days between January 1 and December 31.

Select DATEDIFF('2023-12-31', '2023-01-01')
as Days;

4. Using one statement, round today's date to the nearest month and nearest year and truncate it to the nearest month and nearest year. Use an alias for each column.

Select DATE_FORMAT(CURDATE(), '%Y-%m-01')
as Nearest-Month, MAKEDATE(YEAR(CURDATE()),
1) AS Nearest-Year;

5. What is the last day of the month for June 2005? Use an alias for the output.

Select LAST_DAY('2023-06-15') as Last-Day;

6. Display the number of years between the Global Fast Foods employee Bob Miller's birthday and

~~Select FLOOR(MONTHS_BETWEEN(SYSDATE, MIN(Anne-Dak)) /
12) AS Years-Between FROM employees;~~

today. Round to the nearest year.

7. Your next appointment with the dentist is six months from today. On what day will you go to the dentist? Name the output, "Appointment."

select employee_id, round(TIMESTAMPDIFF(MONTH, CURDATE(), CURDATE() + INTERVAL 6 MONTH)) AS months_worked
FROM employees;

8. The teacher said you have until the last day of this month to turn in your research paper. What day will this be? Name the output, "Deadline."

select employee_id, curdate(), PAYMENT_DATE_DATE
AS pay_date FROM employees;

9. How many months between your birthday this year and January 1 next year?

select TIMESTAMPDIFF(MONTH, '2000-07-15',
'2023-01-01') AS months_diff;

10. What's the date of the next Friday after your birthday this year? Name the output, "First Friday."

select next_day(TO_DATE('15-JUL-2023',
'DD-MON-YYYY'), 'FRIDAY') AS next_Friday
FROM dual;

11. Name a date function that will return a number.

CHAR_LENGTH('Hello')

12. Name a date function that will return a date.

CURDATE()

13. Give one example of why it is important for businesses to be able to manipulate date data?

Tracking sales trends by month/year.

Conversion Functions

In each of the following exercises, feel free to use labels for the converted column to make the output more readable.

1. List the last names and birthdays of Global Fast Food Employees. Convert the birth dates to character data in the Month DD, YYYY format. Suppress any leading zeros.

```
select last-name, To-CHAR(birth-date, 'Month DD, YYYY')  
AS formatted-birth-date from global-fast-food-employees;
```

2. Convert January 3, 04, to the default date format 03-Jan-2004.

```
select To-DATE('January 3, 04', 'Month DD, YYYY') AS  
default-date from dual;
```

3. Format a query from the Global Fast Foods f_promotional_menus table to print out the start_date of promotional code 110 as: The promotion began on the tenth of February 2004.

```
select To-DATE('10-Feb-2004', 'DD-Mon-YYYY') AS  
promotion-begin from promotional-menu where promo-code=10;
```

4. Convert today's date to a format such as: "Today is the Twentieth of March, Two Thousand Four"

```
select 'Today is the' || To-CHAR(sysdate, 'FMDay, "the"  
DDth of Month, YYYY') AS formatted-today FROM dual;
```

5. List the ID, name and salary for all Global Fast Foods employees. Display salary with a \$ sign and two decimal places.

```
Select employee-id, name, To-CHAR(salary, '$999,999.99') AS  
formatted-salary from global-fast-food;
```

Evaluation Procedure	Marks awarded
Practice Evaluation (5)	5
Viva(5)	5
Total (10)	10
Faculty Signature	BPL 8/9/25