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### **```**

### **1. List all employees' full names and their current department names.**

### **```**

SELECT e.first\_name, e.Last\_name, CONCAT(e.first\_name, " ", e.last\_name) as Full\_name ,de.to\_date, d.dept\_name

FROM employees e

JOIN dept\_emp de on e.emp\_no = de.emp\_no

JOIN departments d on de.dept\_no = d.dept\_no

WHERE de.to\_date = '9999-01-01'

-- if to\_date year is 9999 then they are still active in that dept

ORDER BY to\_date asc;

### **```**

### **2. Find the titles of employees currently working in the 'Sales' department.**

### **```**

SELECT t.title, CONCAT(e.first\_name, e.Last\_name) as full\_name, d.dept\_name

FROM employees e

JOIN dept\_emp de on e.emp\_no = de.emp\_no

join departments d on de.dept\_no = d.dept\_no

JOIN titles t on e.emp\_no = t.emp\_no

WHERE d.dept\_name = 'Sales'

and de.to\_date = '9999-01-01' and t.to\_date = '9999-01-01';

### **```**

### **3. Retrieve the employee number and salary of the highest-paid employee.**

### **```**

SELECT s.emp\_no, s.salary FROM salaries as s WHERE salary = (SELECT MAX(salary) from salaries)

--easy method

SELECT s.emp\_no, s.salary from salaries s ORDER BY salary desc LIMIT 1;

### **```**

### **4. List the departments with more than 30000 employees.**

### **```**

SELECT d.dept\_name, COUNT(de.emp\_no) as total\_emp from dept\_emp as de

JOIN departments as d ON de.dept\_no = d.dept\_no

GROUP BY de.dept\_no

HAVING total\_emp > 30000;

--method 2

SELECT d.dept\_name, COUNT(de.emp\_no) AS emp\_count

FROM departments d

JOIN dept\_emp de ON d.dept\_no = de.dept\_no

GROUP BY d.dept\_name

HAVING COUNT(de.emp\_no) > 30000;

### **```**

### **5. Find the average salary for each department.**

### **```**

SELECT d.dept\_name,ROUND(AVG(s.salary)) as Avg\_salary from departments as d

JOIN dept\_emp as de ON d.dept\_no = de.dept\_no

JOIN salaries as s on de.emp\_no = s.emp\_no

WHERE s.to\_date = '9999-01-01'

GROUP BY d.dept\_name;

### **```**

### **6. List the employees who have held more than one title.**

### **```**

SELECT e.emp\_no, CONCAT(e.first\_name,' ',e.Last\_name) as Full\_name, COUNT(t.title) as no\_of\_title from employees e

JOIN titles t on e.emp\_no = t.emp\_no

GROUP BY e.emp\_no, Full\_name

HAVING no\_of\_title > 1

ORDER BY COUNT(t.title) desc

### **```**

### **7. Find the employee(s) who have been with the company the longest.**

### **```**

SELECT \* from employees

ORDER BY hire\_date asc

LIMIT 1;

### **```**

### **8. Retrieve the full names of employees managed by a specific manager (e.g., emp\_no = 10002).**

### **```**

SELECT e.emp\_no, CONCAT(e.first\_name,' ',e.last\_name) as full\_name, de.dept\_no from employees e

join dept\_emp de on e.emp\_no = de.emp\_no

JOIN dept\_manager dm ON de.dept\_no=dm.dept\_no

WHERE dm.emp\_no = '111035'

ORDER BY e.emp\_no AND de.to\_date = '9999-01-01';

-- CTE method to add manager name

WITH aa as(

SELECT e.emp\_no, CONCAT(e.first\_name,' ',e.last\_name) as full\_name, de.dept\_no, dm.emp\_no as manager\_emp\_no from employees e

join dept\_emp de on e.emp\_no = de.emp\_no

JOIN dept\_manager dm ON de.dept\_no=dm.dept\_no

WHERE dm.emp\_no = '111035'

ORDER BY e.emp\_no AND de.to\_date = '9999-01-01'

)

SELECT aa.emp\_no, aa.full\_name, aa.dept\_no, e.first\_name as manager\_name from aa

JOIN employees e ON aa.manager\_emp\_no=e.emp\_no

### **```**

### **9. List all the employees who were hired in 1995.**

### **```**

SELECT \* from employees

WHERE YEAR(hire\_date) = '1995';

### **```**

### **10. Find the department(s) with the lowest average salary.**

### **```**

SELECT d.dept\_no, d.dept\_name, ROUND(AVG(s.salary)) as Avg\_salary from departments d

JOIN dept\_emp de on d.dept\_no = de.dept\_no

JOIN salaries s on de.emp\_no = s.emp\_no

WHERE s.to\_date = '9999-01-01'

GROUP BY d.dept\_no, d.dept\_name

ORDER BY Avg\_salary asc

limit 1;

### **```**

### **11. Retrieve the number of employees in each department who hold the title 'Engineer'.**

### **```**

SELECT d.dept\_name, COUNT(t.title) as Total\_Engineer from departments d

JOIN dept\_emp de on d.dept\_no = de.dept\_no

JOIN titles t ON de.emp\_no = t.emp\_no

WHERE t.title = 'Engineer' AND de.to\_date = '9999-01-01'

GROUP BY d.dept\_name;

### **```**

### **12. List all employees who have never been managers.**

### **```**

SELECT e.emp\_no,e.first\_name,dm.emp\_no from employees e

LEFT JOIN dept\_manager dm on e.emp\_no = dm.emp\_no

WHERE dm.emp\_no is NULL;

### **```**

### **13. Find the average salary of employees with the title 'Senior Engineer'.**

### **```**

SELECT t.title, AVG(s.salary) from employees e

JOIN titles t on e.emp\_no = t.emp\_no

JOIN salaries s on e.emp\_no = s.emp\_no

WHERE t.title = 'Senior Engineer' AND s.to\_date = '9999-01-01'

GROUP BY title;

### **```**

### **14. List employees who have worked in more than one department.**

### **```**

SELECT e.emp\_no, e.first\_name, COUNT(de.dept\_no) as no\_of\_dept from employees e

JOIN dept\_emp de ON e.emp\_no = de.emp\_no

GROUP BY e.emp\_no, e.first\_name

HAVING no\_of\_dept > 1;

-- Simple one

SELECT de.emp\_no, COUNT(de.emp\_no) from dept\_emp de

GROUP BY de.emp\_no HAVING COUNT(de.emp\_no) > 1;

### **```**

### **15. Find the most common title in the company.**

### **```**

SELECT t.title, COUNT(emp\_no) as total\_emp from titles t

GROUP BY t.title

ORDER BY total\_emp DESC

LIMIT 1;

### **```**

### **16. Retrieve the total number of employees who have left the company (i.e., have an end date in salaries or dept\_emp).**

### **```**

SELECT COUNT(DISTINCT emp\_no) AS employees\_left from dept\_emp

WHERE to\_date <> '9999-01-01';

### **```**

### **17. List the departments and their corresponding managers' full names.**

### **```**

SELECT d.dept\_name, dm.emp\_no, e.first\_name from departments d

JOIN dept\_manager dm on d.dept\_no = dm.dept\_no

JOIN employees e on dm.emp\_no = e.emp\_no

---- add this is you want current managers

WHERE dm.to\_date = '9999-01-01';

### **```**

### **18. Find all female employees who have been with the company for over 10 years.**

### **```**

SELECT e.emp\_no, e.first\_name as total\_days from employees e

WHERE e.gender = 'F' and DATEDIFF(CURRENT\_DATE, e.hire\_date) > 3650;

### **```**

### **19. Retrieve the highest salary for each department.**

### **```**

SELECT d.dept\_name, MAX(s.salary) as Max\_salary from departments d

JOIN dept\_emp de ON d.dept\_no = de.dept\_no

JOIN salaries s ON de.emp\_no=s.emp\_no

WHERE s.to\_date = '9999-01-01'

GROUP BY d.dept\_name;

### **```**

### **20. List the employees who have changed their title more than twice.**

### **```**

SELECT e.emp\_no, e.first\_name, e.last\_name, COUNT(t.title) as total\_title from employees e

JOIN titles t on e.emp\_no = t.emp\_no

GROUP by e.emp\_no, e.first\_name, e.last\_name

HAVING total\_title > 2;

### **```**

### **21. Find the department with the highest employee retention rate.**

### **```**

SELECT d.dept\_name, COUNT(de.emp\_no) as retention\_count FROM departments d

JOIN dept\_emp de ON d.dept\_no = de.dept\_no

WHERE de.to\_date = '9999-01-01'

GROUP BY d.dept\_name

ORDER BY retention\_count DESC

LIMIT 1;

### **```**

### **22. Retrieve all employees who earn more than the average salary in their department.**

### **```**

with avg as (

SELECT d.dept\_no, d.dept\_name, AVG(s.salary)as avg\_dept\_sal from departments d

JOIN dept\_emp de on d.dept\_no = de.dept\_no

JOIN salaries s on de.emp\_no = s.emp\_no

WHERE s.to\_date = '9999-01-01'

GROUP BY d.dept\_no,dept\_name

),

emp as (

SELECT e.emp\_no, e.last\_name, s.salary, de.dept\_no from employees e

JOIN salaries s on e.emp\_no = s.emp\_no

JOIN dept\_emp de on e.emp\_no = de.emp\_no

WHERE s.to\_date = '9999-01-01'

)

SELECT emp.emp\_no, emp.last\_name,emp.salary, emp.dept\_no, avg.avg\_dept\_sal from emp

JOIN avg on emp.dept\_no = avg.dept\_no

WHERE emp.salary > avg.avg\_dept\_sal;

Method 2

----- Methos 2

WITH AvgSalaryPerDept AS (

SELECT d.dept\_no, AVG(s.salary) AS avg\_salary

FROM departments d

JOIN dept\_emp de ON d.dept\_no = de.dept\_no

JOIN salaries s ON de.emp\_no = s.emp\_no

WHERE s.to\_date = '9999-01-01'

GROUP BY d.dept\_no

)

SELECT e.emp\_no, e.first\_name, e.last\_name, s.salary, d.dept\_name

FROM employees e

JOIN dept\_emp de ON e.emp\_no = de.emp\_no

JOIN salaries s ON e.emp\_no = s.emp\_no

JOIN departments d ON de.dept\_no = d.dept\_no

JOIN AvgSalaryPerDept a ON de.dept\_no = a.dept\_no

WHERE s.salary > a.avg\_salary AND s.to\_date = '9999-01-01';

Method 3

----- Methos 3

SELECT e.emp\_no, e.first\_name, e.last\_name, s.salary, d.dept\_name

FROM employees e

JOIN dept\_emp de ON e.emp\_no = de.emp\_no

JOIN salaries s ON e.emp\_no = s.emp\_no

JOIN departments d ON de.dept\_no = d.dept\_no

JOIN (

SELECT d.dept\_no, AVG(s.salary) AS avg\_salary

FROM departments d

JOIN dept\_emp de ON d.dept\_no = de.dept\_no

JOIN salaries s ON de.emp\_no = s.emp\_no

WHERE s.to\_date = '9999-01-01'

GROUP BY d.dept\_no) as a ON de.dept\_no = a.dept\_no

WHERE s.salary > a.avg\_salary AND s.to\_date = '9999-01-01';

### **```**

### **23. List the total salary expenditure per department.**

### **```**

SELECT d.dept\_name, SUM(s.salary) as total\_salary from departments d

JOIN dept\_emp de ON d.dept\_no=de.dept\_no

JOIN salaries s on de.emp\_no = s.emp\_no

WHERE s.to\_date = '9999-01-01'

GROUP BY d.dept\_name;

### **```**

### **24. Retrieve the gender distribution across all departments.**

### **```**

SELECT d.dept\_name,e.gender, COUNT(e.emp\_no) as gender from departments d

JOIN dept\_emp de ON d.dept\_no = de.dept\_no

JOIN employees e on de.emp\_no = e.emp\_no

GROUP BY d.dept\_name, e.gender;

### **```**

### **25. Find the difference between the highest and lowest salary in the company.**

### **```**

SELECT (max(s.salary) - min(s.salary)) as salary\_difference from salaries s

### **```**

### **26. List the employees with the most recent hire date.**

### **```**

SELECT e.emp\_no, e.first\_name, e.last\_name, e.hire\_date from employees e

ORDER BY e.hire\_date DESC

limit 1;

### **```**

### **27. Find employees who have held a managerial position in more than one department.**

### **```**

SELECT emp\_no, COUNT(dept\_no) manager\_count from dept\_manager

GROUP BY emp\_no

HAVING manager\_count > 1;

-- Using employee Table

SELECT e.emp\_no, e.first\_name, e.last\_name, COUNT(dm.dept\_no) AS manager\_count

FROM employees e

JOIN dept\_manager dm ON e.emp\_no = dm.emp\_no

GROUP BY e.emp\_no, e.first\_name, e.last\_name

HAVING COUNT(dm.dept\_no) > 1;

### **```**

### **28. Retrieve the full name and salary of employees who earn more than their manager.**

### **```**

SELECT e.emp\_no, CONCAT(e.first\_name,' ', e.last\_name)as full\_name, s.salary from employees e

JOIN salaries s ON e.emp\_no = s.emp\_no

JOIN dept\_emp de ON e.emp\_no = de.emp\_no

JOIN dept\_manager dm on de.dept\_no = dm.dept\_no

JOIN salaries ms on dm.emp\_no = ms.emp\_no and ms.to\_date = '9999-01-01'

WHERE s.salary > ms.salary and s.to\_date = '9999-01-01';

### **```**

### **29. List the names of departments with no employees currently assigned.**

### **```**

SELECT d.dept\_name from departments d

LEFT JOIN dept\_emp de on d.dept\_no = de.dept\_no and de.to\_date = '9999-01-01'

WHERE de.emp\_no is not NULL;

### **```**

### **30. Find the titles and the number of employees holding each title in the 'Research' department.**

### **```**

SELECT t.title, COUNT(t.emp\_no) as total\_emp , de.dept\_no, d.dept\_name from titles t

JOIN dept\_emp de on t.emp\_no = de.emp\_no

JOIN departments d on de.dept\_no = d.dept\_no

WHERE d.dept\_name = 'Research' and t.to\_date = '9999-01-01'

GROUP BY t.title