SQL Project

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1. Employees with Specific Job Role and Department

Question: Find all employees who have the same job role as 'Sales Representative' and are from the 'Sales' department. Show their empid, name, department, and job role.

Query

```
select empid,name,department,jobrole from employee
where jobrole = 'Sales Representative' and department = 'Sales'
```

Output

	empid [PK] character varying	name character varying (200)	department character varying (250)	jobrole character varying (250)
1	RM458	Charlie	Sales	Sales Representative
2	RM1154	Mallory	Sales	Sales Representative
3	RM128	Heidi	Sales	Sales Representative
4	RM172	Bob	Sales	Sales Representative
5	RM689	Heidi	Sales	Sales Representative
6	RM663	David	Sales	Sales Representative
7	RM777	Bob	Sales	Sales Representative
8	RM877	John	Sales	Sales Representative
9	RM1179	Charlie	Sales	Sales Representative
10	RM1198	Alice	Sales	Sales Representative

2. Average Salary by Department

Question 2: Calculate the average salary of employees grouped by their department. Display the department and the average salary.

Query

```
select avg(salary), department from employee
group by department
```

Output

	avg numeric	department character varying (250)
1	60246.571428571429	Human Resources
2	64188.384775808133	Research & Development
3	63938.270270270270	Sales

3. Employees Earning Above Average Salary

Question 3: List the names and salaries of employees who earn more than the average salary of all employees.Use a subquery to find the average salary.

Query

```
select name,salary from employee
where salary >(select avg(salary) from employee)
```

Output

	name character varying (200)	salary integer
1	Mallory	93718
2	Heidi	75108
3	Heidi	79232
4	Bob	65768
5	Heidi	75150
6	Bob	64485
7	John	86490
8	Irene	76224

4. Highest Salary in Each Department

Question 4: For each department, find the employee with the highest salary.Use window functions to achieve this and display empid, name, department, and salary.

Query

```
WITH RankedSalaries AS (
    SELECT empid, name, department, salary,
    ROW_NUMBER() OVER (PARTITION BY department ORDER BY salary DESC) AS rank
    FROM employee)
SELECT empid, name, department, salary
FROM RankedSalaries
WHERE rank = 1;
```

Output

	empid [PK] character varying	name character varying (200)	department character varying (250)	salary integer
1	RM729	Eve	Human Resources	99278
2	RM550	Irene	Research & Development	99873
3	RM822	Irene	Sales	99999

5. Automatic Age Group Update Trigger

Question 5: Create a trigger that automatically updates the 'agegroup' of an employee based on their 'age' whenever an employee's age is updated.

Query

```
create or replace function update_age()
RETURNS TRIGGER as $$
BEGIN
    IF NEW.age BETWEEN 18 AND 25 THEN
        NEW.agegroup := '18-25';
    ELSIF NEW.age BETWEEN 26 AND 35 THEN
        NEW.agegroup := '26-35';
    ELSIF NEW.age BETWEEN 36 AND 45 THEN
        NEW.agegroup := '36-45';
    ELSIF NEW.age BETWEEN 46 AND 55 THEN
        NEW.agegroup := '46-55';
    ELSE
        NEW.agegroup := '56+';
    END IF;
    RETURN NEW;
END
$$ LANGUAGE plpgsql;

create trigger trigger_update_age
before update on employee
for each row
execute function update_age()

update employee set age = 38 where name = 'Charlie'
```

Output

6. Calculate Annual Salary

Question 6: Write a function to calculate the annual salary of an employee based on their monthly salary. Then, use this function to list empid, name, and their annual salary.

Query

```
create or replace function calculate_annual_salary(salary int)
RETURNS int as $$
begin
    return salary * 12;
end;
$$ language plpgsql;

select empid,name,calculate_annual_salary(salary) as annual_salary from employee
```

7. Employees with Names Starting with 'C'

---Question 7: Use a regular expression to find all employees whose names start with 'C'. Display their empid and name.

Query

```
select empid,name from employee where name like 'C%'
select empid,name from employee where name ~'^C'
```

Output

	empid [PK] character varying	name character varying (200)
1	RM458	Charlie
2	RM514	Charlie
3	RM1179	Charlie
4	RM1272	Charlie
5	RM1214	Charlie

8. Departments with Average Salary Above 50,000

Question 8: Find departments where the average salary is greater than 50,000. Use the HAVING clause to filter the grouped results.

Query

```
select avg(salary), department from employee
group by department
having avg(salary) > 50000
```

Output

	avg numeric	department character varying (250)
1	60246.571428571429	Human Resources
2	64188.384775808133	Research & Development
3	63938.270270270270	Sales

9. Salary Rank Within Each Department

Question 10: Rank employees based on their salary within each department.Display empid, name, department, salary, and rank.

Query

```
select empid,name,department,salary,row_number()
over (partition by department order by salary) as rank from employee
```

Output

	empid [PK] character varying	name character varying (200)	department character varying (250)	salary integer	rank bigint
1	RM1097	Heidi	Human Resources	31440	1
2	RM1024	John	Human Resources	32922	2
3	RM1223	Bob	Human Resources	33062	3
4	RM1313	Bob	Human Resources	33500	4
5	RM1108	John	Human Resources	35299	5
6	RM864	Irene	Human Resources	35850	6
7	RM1065	Eve	Human Resources	37589	7
8	RM524	Heidi	Human Resources	38172	8

10. Find Employees with a Salary Above a Certain Amount

Question 10: Find all employees whose salary is greater than 30,000. Show their empid, name, and salary.

Query

```
select empid,name,salary from employee where salary > 30000
```

Output

	empid [PK] character varying	name character varying (200)	salary integer
1	RM728	Mallory	93718
2	RM829	John	42393
3	RM973	Irene	45888
4	RM1154	Mallory	31007
5	RM1312	Heidi	75108
6	RM128	Heidi	79232
7	RM150	David	46370