

Advanced MySQL & R sqldf Quiz Questions

Advanced MySQL Questions

Q1. Write a query to find the second highest salary from an employees table.

Answer:

```
SELECT MAX(salary) FROM employees WHERE salary < (SELECT MAX(salary) FROM employees);
```

Q2. Write a query to find the department with the highest average salary.

Answer:

```
SELECT department_id FROM employees GROUP BY department_id ORDER BY AVG(salary) DESC LIMIT 1;
```

Q3. Find all employees whose salary is above the average salary of their department.

Answer:

```
SELECT * FROM employees e WHERE salary > (SELECT AVG(salary) FROM employees WHERE department_id = e.department_id);
```

Q4. Write a query using window functions to show each employee's salary and the average salary of their department.

Answer:

```
SELECT employee_id, salary, AVG(salary) OVER (PARTITION BY department_id) AS avg_dept_salary FROM employees;
```

Q5. Write a query to find employees who earn more than their managers.

Answer:

```
SELECT e1.employee_name FROM employees e1 JOIN employees e2 ON e1.manager_id = e2.employee_id WHERE e1.salary > e2.salary;
```

Q6. Write a query to find the cumulative sum of salaries ordered by employee hire date.

Answer:

```
SELECT employee_id, hire_date, salary, SUM(salary) OVER (ORDER BY hire_date) AS cum_salary FROM employees;
```

Q7. Write a query to get the top 3 earners from each department.

Answer:

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SELECT * FROM (SELECT *, ROW_NUMBER() OVER (PARTITION BY department_id ORDER BY salary DESC) AS rn FROM employees) tmp WHERE rn <= 3;

Q8. Write a query to find departments with more than 10 employees and average salary above 60000.

Answer:

```
SELECT department_id FROM employees GROUP BY department_id HAVING COUNT(*) > 10 AND AVG(salary) > 60000;
```

Q9. Write a correlated subquery to list employees who have the maximum salary in their department.

Answer:

```
SELECT * FROM employees e1 WHERE salary = (SELECT MAX(salary) FROM employees e2 WHERE e1.department_id = e2.department_id);
```

Q10. Write a query to delete duplicate employee records keeping only one record per employee based on employee_id.

Answer:

```
DELETE e1 FROM employees e1 INNER JOIN employees e2 WHERE e1.employee_id > e2.employee_id AND e1.employee_name = e2.employee_name;
```

Advanced R sqldf Questions

Q1. Write an sqldf query to find the 3rd highest 'mpg' value in mtcars dataset.

Answer:

```
sqldf("SELECT DISTINCT mpg FROM mtcars ORDER BY mpg DESC LIMIT 1 OFFSET 2")
```

Q2. Write an sqldf query to find average 'mpg' per cylinder count where horsepower ('hp') is above 100.

Answer:

```
sqldf("SELECT cyl, AVG(mpg) AS avg_mpg FROM mtcars WHERE hp > 100 GROUP BY cyl")
```

Q3. Write an sqldf query to join mtcars with itself to find pairs of cars with the same number of cylinders but different gear counts.

Answer:

```
sqldf("SELECT a.model AS car1, b.model AS car2 FROM mtcars a JOIN mtcars b ON a.cyl = b.cyl AND a.gear <> b.gear")
```

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Q4. Write an sqldf query to rank cars by 'mpg' within each cylinder group.

Answer:

```
sqldf("SELECT model, cyl, mpg, RANK() OVER (PARTITION BY cyl ORDER BY mpg DESC) AS rank FROM mtcars")
```

Q5. Write an sqldf query to calculate the running total of 'mpg' ordered by 'wt' in mtcars.

Answer:

```
sqldf("SELECT model, wt, mpg, SUM(mpg) OVER (ORDER BY wt) AS running_mpg FROM mtcars")
```

Q6. Write an sqldf query to select iris flowers where Sepal.Length is greater than the average Sepal.Length of their Species.

Answer:

```
sqldf("SELECT * FROM iris i WHERE Sepal_Length > (SELECT AVG(Sepal_Length) FROM iris WHERE Species = i.Species)")
```

Q7. Write an sqldf query to count the number of unique Species in iris dataset.

Answer:

```
sqldf("SELECT COUNT(DISTINCT Species) AS species_count FROM iris")
```

Q8. Write an sqldf query to find the maximum Petal.Width for each Species in iris dataset.

Answer:

```
sqldf("SELECT Species, MAX(Petal_Width) AS max_petal_width FROM iris GROUP BY Species")
```

Q9. Write an sqldf query to select the top 5 rows from mtcars ordered by 'disp' descending.

Answer:

```
sqldf("SELECT * FROM mtcars ORDER BY disp DESC LIMIT 5")
```

Q10. Write an sqldf query to select cars with horsepower above the average horsepower.

Answer:

```
sqldf("SELECT * FROM mtcars WHERE hp > (SELECT AVG(hp) FROM mtcars)")
```