SQL Interview Question

PwC Data Analyst Interview

"Calculate gender distribution percentages from employee data"

📋 Input: Employee Table

id	name	gender
1	Alice	Female
2	Bob	Male
3	Carol	Female
4	David	Male
5	Eve	Female

2	Bob	Male
3	Carol	Female
4	David	Male
5	Eve	Female

🎯 Expected Output

gender	percentage
Female	60.00%
Male	40.00%

The Core Pattern

4-Step Intuition for Percentage Calculation

1

Total Count

Get denominator by counting all rows

```
SUM (COUNT(*)) OVER()
```

2

Group Count

Count occurrences per category

```
GROUP BY gender
```

3

Calculate Ratio

Divide group count by total

```
group_count ÷ total_count
```

4

Percentage

Multiply by 100 & format

```
× 100.0 + ROUND(...)
```

⚡ This pattern works for ANY percentage distribution:

Departments • Categories • Regions • Statuses • Any grouped analysis

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MySQL Solution

One Pass, One Window Function

```mysql
-- Calculate gender distribution percentages

SELECT
gender,
ROUND(
COUNT(*) * 100.0 /
SUM(COUNT(*)) OVER(),
2
) AS percentage
FROM Employee
GROUP BY gender
ORDER BY percentage DESC;
```

🚀

Single Pass

One table scan, optimal performance

💡

Window Magic

SUM(COUNT(*)) OVER() gets total

🎯

Precise

* 100.0 ensures decimal math

Result & Verification

Mathematical Breakdown

✅ Expected Output

gender	percentage
Female	60.00%
Male	40.00%

60.00% + 40.00% = 100.00% ✓

🧮 Calculation

Total Employees:	5
Female:	3
Male:	2

```
Female % = (3 ÷ 5) × 100 = 60%
```

```
Male % = (2 ÷ 5) × 100 = 40%
```

Performance Benefits

Why This Approach Wins

🚀 Naive Approach

CTEs Used:	2+
Table Scans:	Multiple
Code Lines:	10-15
Readability:	Complex

⚡ Smart Approach

CTEs Used:	0
Table Scans:	1
Code Lines:	7
Readability:	Simple

📈

O(n) Complexity

Linear time, optimal for large data

💾

O(1) Extra Space

Minimal memory usage

🎯

Interview Ready

Pattern shows SQL mastery

Master SQL Patterns

Level Up Your Interview Game

🚀 Ready to Ace Your Next SQL Interview?

- ✓ Department percentages
- ✓ Product category distributions
- ✓ User segment analysis
- ✓ Any grouped percentage calculation

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