Scenario Based SQL

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🎯 Step 1. Understand the Scenario in Simple Words

- Don't rush into writing SQL.
- Read the question carefully → Translate it into **plain English**.
- Example:
  Q: "Find employees whose salary is greater than the average salary of their department."
  👉 Plain English: *"For each employee, compare their salary with the department average. Show only if it's higher."*

🎯 Step 2. Identify the Tables and Columns

- Beginners often get lost because they don't know which table/column to use.
- Always ask:
  - Which table has the data?
  - Which columns are needed?
- Example: employees (emp_id, emp_name, salary, dept_id)

🎯 Step 3. Break the Problem into Parts

- Don't try to write the whole query at once.
- Solve in **small steps**:
  1. First, find average salary per department
  2. Then, compare employee salary with that average

🎯 Step 4. Use Building Blocks

- For beginners, I teach them to build queries like Lego blocks:
  - Start with a **basic SELECT**
  - Add **WHERE filters**
  - Add **GROUP BY if aggregation needed**
  - Add **JOIN if multiple tables involved**
  - Add **subquery if comparison needed**

🎯 Step 5. Practice a Pattern-Based Approach

Most scenario questions fall into a few repeatable patterns:

Scenario	SQL Pattern
Find records with max/min	WHERE col = (SELECT MAX(col) FROM ...)
Compare with average	WHERE col > (SELECT AVG(col) ...)

Show related info (2+ tables)	Use JOIN
Count/group	GROUP BY + HAVING
Missing data	LEFT JOIN + WHERE col IS NULL

👉 Teaching trainees these **5–6 patterns** helps them solve 70% of scenario questions.

🎯 Step 6. Visualize Joins with Diagrams

- Non-IT learners understand faster when they see a **Venn diagram** for INNER JOIN / LEFT JOIN.
- Example: "Show customers who have not placed orders" → Draw Customer circle + Order circle → pick only left-side without overlap.

🎯 Step 7. Encourage Pseudocode First

Before writing SQL, write like this:

1. Find average salary per department
2. Compare each employee's salary
3. Show only if salary > department average

👉 This reduces fear and avoids mistakes.

✅ Example Walkthrough (Beginner Friendly)

Q: Find employees who never placed an order.

👉 **Step 1. Translate:** Employees without orders.

👉 **Step 2. Tables:** **employees**, **orders**.

👉 **Step 3. Columns:** **employee_id** in both.

👉 **Step 4. Build:**

```
SELECT e.emp_id, e.emp_name
FROM employees e
LEFT JOIN orders o
  ON e.emp_id = o.emp_id
WHERE o.emp_id IS NULL;
```

🔎 Simple, clear, pattern = "Find missing data".

🛠️ Training Tips for Non-IT Beginners

- Use **real-life relatable examples** → Students & Courses, Customers & Orders, Patients & Doctors.
- Give **step-by-step hints** rather than the full query.
- Use **small datasets (5–10 rows)** so results are easy to see.
- Encourage **group discussion** → beginners learn faster by explaining in plain English to peers.

✅ **Bottom line:**
The best way is **break down the problem into small steps, identify table/column, match with a known SQL pattern, and build query gradually**.