

Google Asked This SQL Question

INPUT

n = 8

FULL OUTPUT (Fibonacci)

0 1 1 2 3 5
8 13

⚠ 90% of candidates fail by using LOOPS.

You need to solve this in a single query.

 THE SECRET: RECURSIVE CTEs



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Recursive CTE Pattern

Three key components to master recursion

Anchor Member

The starting point. Defines the base cases 0 and 1.

```
SELECT 1, 0, 1
```

Recursive Member

The rule: Add previous two numbers to get the next.

$$F(n) = F(n-1) + F(n-2)$$

Termination

The stop condition.
Essential to prevent infinite loops.

```
WHERE n < 8
```



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The SMART Solution

Clean, Elegant, Declarative



MYSQL • POSTGRESQL • SQL SERVER

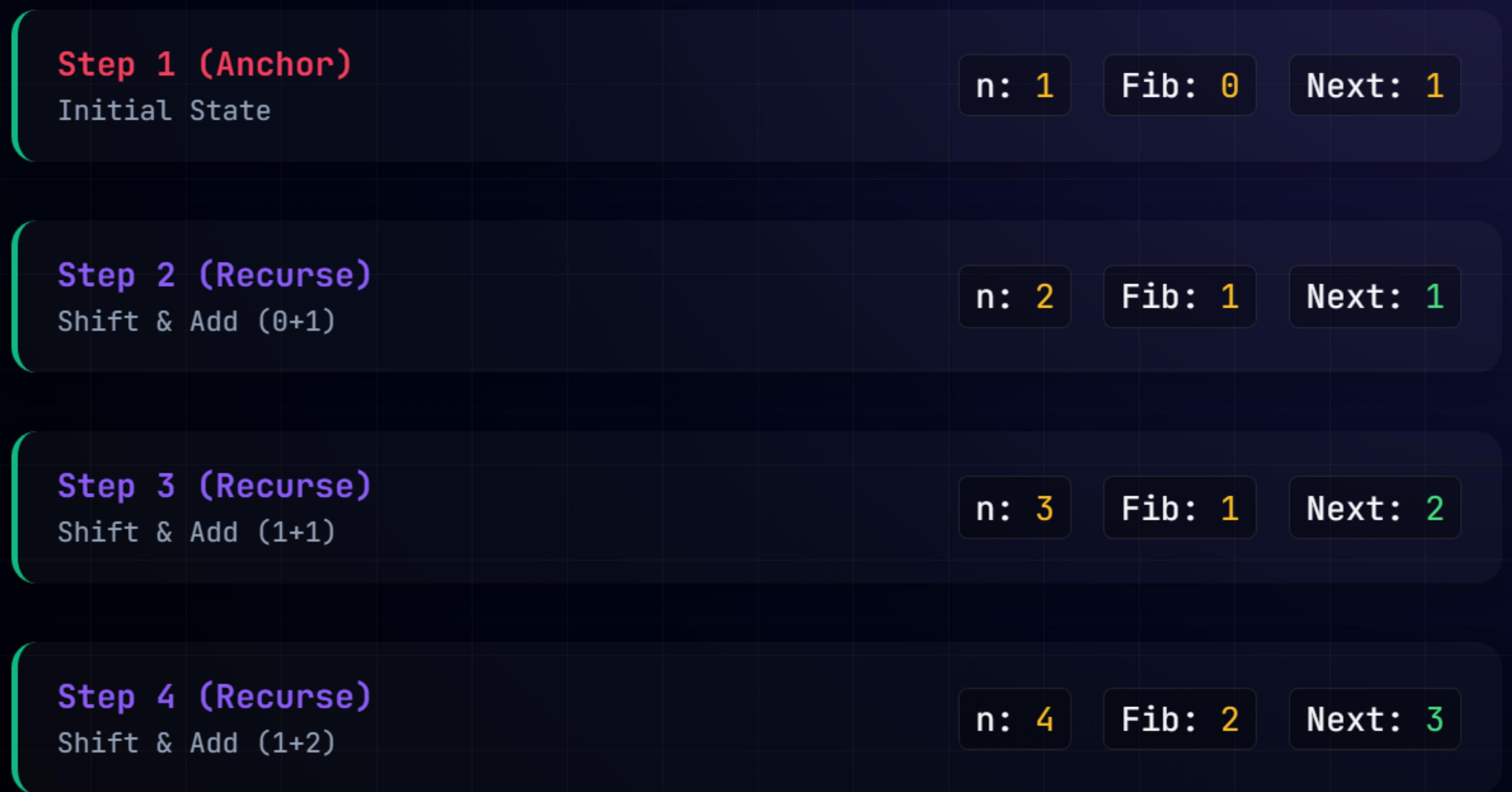
```
WITH RECURSIVE fibonacci AS (
    -- 1. Base Case: Start with 0 and 1
    SELECT
        1 AS n,
        0 AS fib_value,
        1 AS next_value

    UNION ALL

    -- 2. Recursive Step
    SELECT
        n + 1,
        next_value,
        fib_value + next_value
    FROM fibonacci
    WHERE n < 8                -- 3. Stop Condition
)
SELECT n AS pos, fib_value FROM fibonacci;
```

How It Works

Step-by-step memory trace



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Where to Use CTEs

Real places where recursion shines

Org Hierarchies

Traversing employee reporting lines
(Manager -> Employee).

Bill of Materials

Exploding product components (Car ->
Engine -> Screw).

Graph Traversal

Finding shortest paths (Flights, Social
Networks).

Date Series

Generating calendars, missing dates, or
sequences.



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Quick Summary:

- ✓ Recursion is key for FAANG Interviews
- ✓ Anchor defines the start (0, 1)
- ✓ Recursive Member adds logic (Prev + Curr)
- ✓ Always include a Termination Clause



Repost for helping your friends learn this faster



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