

RECURSIVE CTE

SQL Tutorial In Hindi-17

Recursive CTE

- A **recursive CTE** references itself. It returns the result subset, then it repeatedly (recursively) references itself, and stops when it returns all the results.
- A recursive CTE has three elements:
 - **Non-recursive term**: It's a CTE query definition that forms the base result set of the CTE structure.
 - **Recursive term**: One or more CTE query definitions joined with non-recursive term using UNION or UNION ALL operator.
 - **Termination check**: the recursion stops when no rows are returned from the previous iteration.

Recursive CTE

- Syntax

```
WITH RECURSIVE cte_name AS (  
    CTE_query_definition  
    UNION ALL  
    recursive_query_definition  
)  
SELECT * FROM cte_name
```

-- non recursive term

Base query/
anchor member

-- recursive term

Recursive query/
recursive member

Recursive CTE

Example:

```
WITH RECURSIVE my_CTE AS (  
    SELECT 1 AS n  
  
    UNION ALL  
  
    SELECT n+1 FROM my_CTE  
    WHERE n < 3 )  
  
SELECT * FROM my_CTE
```



Base query/
anchor member



Recursive query/
recursive member

Recursive CTE

Use cases

- COUNT UP UNTIL THREE
- Finding Bosses and Hierarchical Level for All Employees
- Finding Routes Between Cities
- FINDING ANCESTORS

Recursive CTE

```
WITH RECURSIVE EmpCTE AS (  
    -- Anchor query  
    Select emp_id, emp_name, manager_id  
    From employees  
    Where emp_id = 7  
  
    UNION ALL  
  
    -- Recursive query  
    Select employees.emp_id , employees.emp_name, employees.manager_id  
    From employees  
    JOIN EmpCTE  
    ON employees.emp_id = EmpCTE.manager_id  
)  
Select * From EmpCTE
```

```
CREATE TABLE employees (  
    emp_id serial PRIMARY KEY,  
    emp_name VARCHAR NOT NULL,  
    manager_id INT );  
  
INSERT INTO employees (  
    emp_id, emp_name, manager_id)  
VALUES  
    (1, 'Madhav', NULL),  
    (2, 'Sam', 1),  
    (3, 'Tom', 2),  
    (4, 'Arjun', 6),  
    (5, 'Shiva', 4),  
    (6, 'Keshav', 1),  
    (7, 'Damodar', 5);
```

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