Problem 3482: Analyze Organization Hierarchy

Problem Information

Difficulty: Hard
Acceptance Rate: 58.84%
Paid Only: No
Tags: Database

Problem Description

Table: `Employees`

+----------------+---------+ | Column Name | Type | +----------------+---------+ | employee_id | int | | employee_name | varchar | | manager_id | int | | salary | int | | department | varchar | +----------------+----------+ employee_id is the unique key for this table. Each row contains information about an employee, including their ID, name, their manager's ID, salary, and department. manager_id is null for the top-level manager (CEO).

Write a solution to analyze the organizational hierarchy and answer the following:

1. **Hierarchy Levels:** For each employee, determine their level in the organization (CEO is level `1`, employees reporting directly to the CEO are level `2`, and so on). 2. **Team Size:** For each employee who is a manager, count the total number of employees under them (direct and indirect reports). 3. **Salary Budget:** For each manager, calculate the total salary budget they control (sum of salaries of all employees under them, including indirect reports, plus their own salary).

Return _the result table ordered by _the result ordered by**level** in **ascending** order, then by **budget** in **descending** order, and finally by **employee_name** in **ascending** order_._

The result format is in the following example.

Example:

Input:

Employees table:

+-------------+---------------+------------+--------+-------------+ | employee_id | employee_name | manager_id | salary | department | +-------------+---------------+------------+--------+-------------+ | 1 | Alice | null | 12000 | Executive | | 2 | Bob | 1 | 10000 | Sales | | 3 | Charlie | 1 | 10000 | Engineering | | 4 | David | 2 | 7500 | Sales | | 5 | Eva | 2 | 7500 | Sales | | 6 | Frank | 3 | 9000 | Engineering | | 7 | Grace | 3 | 8500 | Engineering | | 8 | Hank | 4 | 6000 | Sales | | 9 | Ivy | 6 | 7000 | Engineering | | 10 | Judy | 6 | 7000 | Engineering | +-------------+---------------+------------+--------+-------------+

Output:

+-------------+---------------+-------+-----------+--------+ | employee_id | employee_name | level | team_size | budget | +-------------+---------------+-------+-----------+--------+ | 1 | Alice | 1 | 9 | 84500 | | 3 | Charlie | 2 | 4 | 41500 | | 2 | Bob | 2 | 3 | 31000 | | 6 | Frank | 3 | 2 | 23000 | | 4 | David | 3 | 1 | 13500 | | 7 | Grace | 3 | 0 | 8500 | | 5 | Eva | 3 | 0 | 7500 | | 9 | Ivy | 4 | 0 | 7000 | | 10 | Judy | 4 | 0 | 7000 | | 8 | Hank | 4 | 0 | 6000 | +-------------+---------------+-------+-----------+--------+

Explanation:

* **Organization Structure:** * Alice (ID: 1) is the CEO (level 1) with no manager * Bob (ID: 2) and Charlie (ID: 3) report directly to Alice (level 2) * David (ID: 4), Eva (ID: 5) report to Bob, while Frank (ID: 6) and Grace (ID: 7) report to Charlie (level 3) * Hank (ID: 8) reports to David, and Ivy (ID: 9) and Judy (ID: 10) report to Frank (level 4) * **Level Calculation:** * The CEO (Alice) is at level 1 * Each subsequent level of management adds 1 to the level * **Team Size Calculation:** * Alice has 9 employees under her (the entire company except herself) * Bob has 3 employees (David, Eva, and Hank) * Charlie has 4 employees (Frank, Grace, Ivy, and Judy) * David has 1 employee (Hank) * Frank has 2 employees (Ivy and Judy) * Eva, Grace, Hank, Ivy, and Judy have no direct reports (team_size = 0) * **Budget Calculation:** * Alice's budget: Her salary (12000) + all employees' salaries (72500) = 84500 * Charlie's budget: His salary (10000) + Frank's budget (23000) + Grace's salary (8500) = 41500 * Bob's budget: His salary (10000) + David's budget (13500) + Eva's salary (7500) = 31000 * Frank's budget: His salary (9000) + Ivy's salary (7000) + Judy's salary (7000) = 23000 * David's budget: His salary (7500) + Hank's salary (6000) = 13500 * Employees with no direct reports have budgets equal to their own salary

Note:

* The result is ordered first by level in ascending order * Within the same level, employees are ordered by budget in descending order then by name in ascending order

Code Snippets

MySQL:

```
# Write your MySQL query statement below
```

MS SQL Server:

```
/* Write your T-SQL query statement below */
```

PostgreSQL:

```
-- Write your PostgreSQL query statement below
```