Problem 3236: CEO Subordinate Hierarchy

Problem Information

Difficulty: Hard
Acceptance Rate: 72.83%
Paid Only: Yes
Tags: Database

Problem Description

Table: `Employees`

+---------------+---------+ | Column Name | Type | +---------------+---------+ | employee_id | int | | employee_name | varchar | | manager_id | int | | salary | int | +---------------+---------+ employee_id is the unique identifier for this table. manager_id is the employee_id of the employee's manager. The CEO has a NULL manager_id.

Write a solution to find subordinates of the CEO (both **direct** and **indirect**), along with their **level in the hierarchy** and their **salary difference** from the CEO.

The result should have the following columns:

The query result format is in the following example.

* `subordinate_id`: The employee_id of the subordinate * `subordinate_name`: The name of the subordinate * `hierarchy_level`: The level of the subordinate in the hierarchy (`1` for **direct** reports, `2` for **their direct** reports, and **so on**) * `salary_difference`: The difference between the subordinate's salary and the CEO's salary

Return _the result table ordered by_ `hierarchy_level` _**ascending**_ , _and then by_ `subordinate_id` _**ascending**_.

The query result format is in the following example.

Example:

Input:

`Employees` table:

employee_id	employee_name	manager_id	salary
1	Alice	NULL	150000
2	Bob	1	120000
3	Charlie	1	110000
4	David	2	105000
5	Eve	2	100000
6	Frank	3	95000
7	Grace	3	98000
8	Helen	5	90000

Output:

subordinate_id	subordinate_name	hierarchy_level	salary_difference
2	Bob	1	-30000
3	Charlie	1	-40000
4	David	2	-45000
5	Eve	2	-50000
6	Frank	2	-55000
7	Grace	2	-52000
8	Helen	3	-60000

Explanation:

* Bob and Charlie are direct subordinates of Alice (CEO) and thus have a hierarchy_level of 1. * David and Eve report to Bob, while Frank and Grace report to Charlie, making them second-level subordinates (hierarchy_level 2). * Helen reports to Eve, making Helen a third-level subordinate (hierarchy_level 3). * Salary differences are calculated relative to Alice's salary of 150000. * The result is ordered by hierarchy_level ascending, and then by subordinate_id ascending.

Note: The output is ordered first by hierarchy_level in ascending order, then by subordinate_id 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
```