

# Problem 3236: CEO Subordinate Hierarchy

## Problem Information

Difficulty: **Hard**

Acceptance Rate: 0.00%

Paid Only: No

## 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
```

**Oracle:**

```
/* Write your PL/SQL query statement below */
```

**Pandas:**

```
import pandas as pd

def find_subordinates(employees: pd.DataFrame) -> pd.DataFrame:
```

## Solutions

**MySQL Solution:**

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