



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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Worksheet 2

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Subject Name: ADBMS

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1. Aim:

- A). Organizational Hierarchy Explorer_(medium)
- B). Forecast Matching with Fallback Strategy (hard)

2. Objective:

A)Medium

You are a **Database Engineer** at **TalentTree Inc.**, an enterprise HR analytics platform that stores employee data, including their reporting relationships. The company maintains a centralized **Employee** relation that holds:

Each employee's ID, name, department, and manager ID (who is also an employee in the same table).

Your task is to generate a report that **maps employees to their respective managers**, showing:

- The employee's name and department
 - Their manager's name and department (if applicable)
- This will help the HR department visualize the internal reporting hierarchy.

B) Advanced

You are a Data Engineer at **FinSight Corp**, a company that models Net Present Value (NPV) projections for investment decisions. Your system maintains two key datasets:



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1. **Year_tbl:** Actual recorded NPV's of various financial instruments over different years:
 - ID:** Unique Financial instrument identifier.
 - YEAR:** Year of record
 - NPV:** Net Present Value in that year
2. **Queries_tbl:** A list of instrument-year pairs for which stakeholders are requesting NPV values:
 - ID:** Financial instrument identifier
 - YEAR:** Year of interest.

Find the NPV of each query from the Queries table. Return the output order by ID and Year in the sorted form.

However, not all **ID-YEAR combinations** in the Queries table are present in the Year_tbl. If an NPV is missing for a requested combination, assume it to be 0 to maintain a consistent financial report.

DBMS script

A)

--MEDIUM LEVEL PROBLEM

```
CREATE TABLE Employee(  
    EmpID int,  
    Ename varchar(100),  
    Department varchar(100),  
    ManagerID int  
)
```



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```
INSERT INTO Employee VALUES
```

```
(1, 'Alice', 'HR', NULL),
```

```
(2, 'Bob', 'Finance', 1),
```

```
(3, 'Charlie', 'IT', 1),
```

```
(4, 'David', 'Finance', 2),
```

```
(5, 'Eve', 'IT', 3),
```

```
(6, 'Frank', 'HR', 1)
```

```
SELECT
```

```
E1.Ename AS [Employee Name],
```

```
E2.Ename AS [Manager Name],
```

```
E1.Department AS [Employee Department],
```

```
E2.Department AS [Manager Department]
```

```
FROM Employee AS E1
```

```
LEFT OUTER JOIN
```

```
Employee AS E2
```

```
ON
```

```
E1.ManagerID = E2.EmpID
```

B)

-- HARD LEVEL PROBLEM

```
CREATE TABLE Year_tbl (
```

```
    ID INT,
```

```
    YEAR INT,
```



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NPV INT

);

CREATE TABLE Queries (

ID INT,

YEAR INT

);

INSERT INTO Year_tbl (ID, YEAR, NPV)

VALUES

(1, 2018, 100),

(7, 2020, 30),

(13, 2019, 40),

(1, 2019, 113),

(2, 2008, 121),

(3, 2009, 12),

(11, 2020, 99),

(7, 2019, 0);

INSERT INTO Queries (ID, YEAR)

VALUES

(1, 2019),

(2, 2008),

(3, 2009),

(7, 2018),

(7, 2019),



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(7, 2020),

(13, 2019)

SELECT

Q.ID,

Q.YEAR,

ISNULL(Y.NPV, 0) AS NPV

FROM

Queries AS Q

LEFT JOIN

Year_tbl AS Y

ON

Q.ID = Y.ID AND Q.YEAR = Y.YEAR;



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4.Output:

A)

	Employee Name	Manager Name	Employee Department	Manager Department
1	Alice	NULL	HR	NULL
2	Bob	Alice	Finance	HR
3	Charlie	Alice	IT	HR
4	David	Bob	Finance	Finance
5	Eve	Charlie	IT	IT
6	Frank	Alice	HR	HR

B)

	ID	YEAR	NPV
1	1	2019	113
2	2	2008	121
3	3	2009	12
4	7	2018	0
5	7	2019	0
6	7	2020	30
7	13	2019	40