Experiment No: 2

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Question 1 : Medium-Level Problem

Problem Title : Organizational Hierarchy Explorer

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.

Solution:

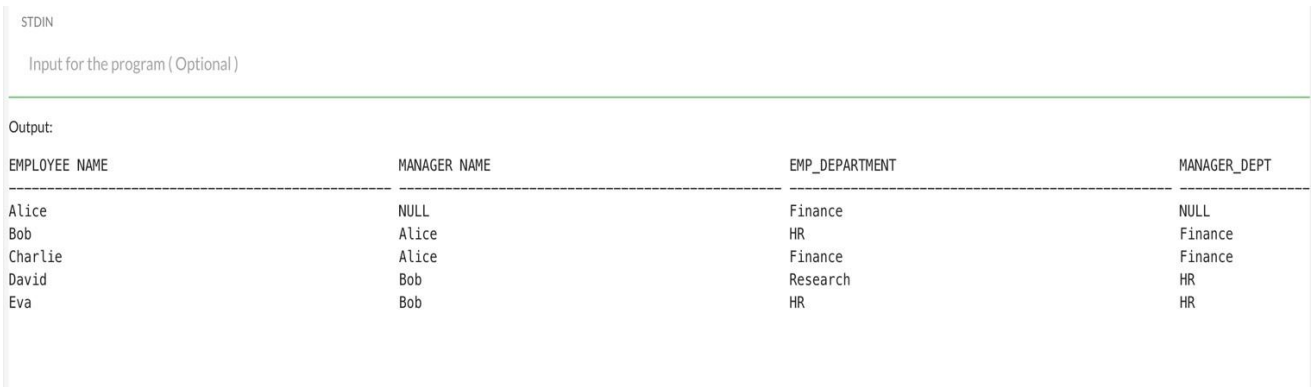
```
CREATE TABLE Employee (
    EmpID INT PRIMARY KEY,
    EmpName VARCHAR(50) NOT NULL,
    Department VARCHAR(50) NOT NULL,
    ManagerID INT NULL
);
```

```
ALTER TABLE Employee
ADD CONSTRAINT FK_Employee FOREIGN KEY (ManagerID)
REFERENCES Employee(EmpID);

INSERT INTO Employee VALUES (1, 'Alice', 'Finance', NULL);
INSERT INTO Employee VALUES (2, 'Bob', 'HR', 1);
INSERT INTO Employee VALUES (3, 'Charlie', 'Finance', 1); INSERT
INTO Employee VALUES (4, 'David', 'Research', 2);
INSERT INTO Employee VALUES (5, 'Eva', 'HR', 2);

SELECT
   E1.EmpName AS [EMPLOYEE NAME],
   E2.EmpName AS [MANAGER NAME],
   E1.Department AS [EMP_DEPARTMENT],
   E2.Department AS [MANAGER_DEPT]
FROM Employee AS E1
LEFT OUTER JOIN Employee AS E2
   ON E1.ManagerID = E2.EmpID;
```

Output:



STDIN

Input for the program (Optional)

Output:

EMPLOYEE NAME	MANAGER NAME	EMP_DEPARTMENT	MANAGER_DEPT
Alice	NULL	Finance	NULL
Bob	Alice	HR	Finance
Charlie	Alice	Finance	Finance
David	Bob	Research	HR
Eva	Bob	HR	HR

Question 2 : Hard - Level Problem

Problem Title: NPV Lookup with Missing Data Handling (Medium)

You are a Data Engineer at FinSight Corp, where Net Present Value (NPV) data is stored and queried regularly.

You maintain two tables:

1. Year_tbl — Actual recorded NPV values:
   - ID: Unique Financial instrument identifier
   - YEAR: Year of record
   - NPV: Net Present Value in that year
2. Queries_tbl — Stakeholder NPV queries:
   - ID: Financial instrument identifier
   - YEAR: Year of interest

Task:

1. Create the two tables described above: Year_tbl and Queries_tbl.
2. Insert at least 5–6 rows of data into each
3. Write an SQL query to:
   - Return each ID, YEAR, and the corresponding NPV (if it exists)
   - Replace missing NPV values with 0
   - Order the output by ID and YEAR in ascending order

Solution:

```
CREATE TABLE Y_TBL (
   ID INT,
   YEAR INT,
   NPV INT
```

```
);


CREATE TABLE Q_TBL (
    ID INT,
    YEAR INT
);

INSERT INTO Y_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 Q_TBL (ID, YEAR) VALUES
(1, 2019),
(2, 2008),
(3, 2009),
(7, 2018),
(7, 2019),
(7, 2020),
(13, 2019);

SELECT
    Q.ID,
```

```
    Q.YEAR,

    ISNULL(Y.NPV, 0) AS NPV
FROM
    Q_TBL Q LEFT
JOIN
    Y_TBL Y
ON
    Q.ID = Y.ID AND Q.YEAR = Y.YEAR
ORDER BY
    Q.ID, Q.YEAR
```

Output:

Input for the program (Optional)

Output:

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