Experiment 1.2

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Subject Name: DBMS **Subject Code: 23CSP-333**

1. **Aim:** Solve the following two problem

Q.1 - 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.

Q.2 - Financial Forecast Matching with Fallback Strategy (hard)
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:
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.

2. Code:

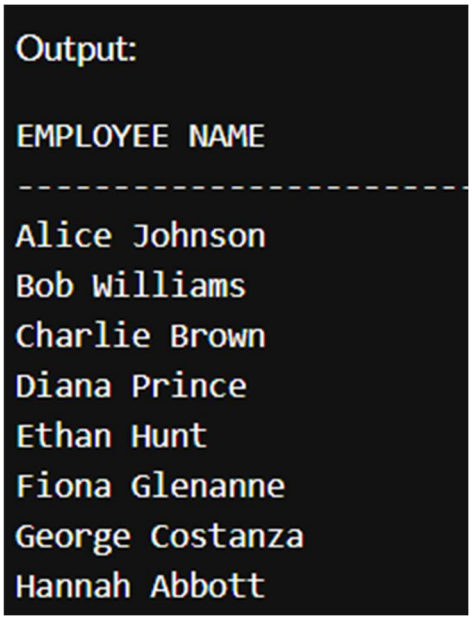
```
CREATE TABLE EMPLOYEE (
    EmpID INT PRIMARY KEY,
    EmpName VARCHAR(100),
    Department VARCHAR(100),
    ManagerID INT
);
```

```
INSERT INTO EMPLOYEE (EmpID, EmpName, Department, ManagerID)
VALUES
(1, 'Alice Johnson', 'Executive', NULL),       -- The CEO, has no manager
(2, 'Bob Williams', 'Technology', 1),
(3, 'Charlie Brown', 'Human Resources', 1),
```

```
(4, 'Diana Prince', 'Marketing', 1),
(5, 'Ethan Hunt', 'Technology', 2),
(6, 'Fiona Glenanne', 'Technology', 2),
(7, 'George Costanza', 'Marketing', 4),
(8, 'Hannah Abbott', 'Human Resources', 3);



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




```
CREATE TABLE Year_tbl (
    ID INT,
    YEAR INT,
    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),
(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
ORDER BY
    Q.ID, Q.YEAR;
```

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