EXPERIMENT 2

Student Name: Pankaj Tayal
UID: 23BCS13706
Branch: CSE
Section/Group: krg-3b
Semester: 5th
Date of Performance: 25/07/25
Subject Name: ADBMS
Subject Code: 23CSP-333

1. Problem Statement:

I. 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.

II. Financial Forecast Matching with Fallback Strategy

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:

Organizational Hierarchy Explorer

```
CREATE TABLE EMPLOYEE(
EMP_ID INT primary key,
EMP_NAME VARCHAR(25),
DEPARTMENT VARCHAR(25),
MANAGER_ID INT);

 INSERT INTO EMPLOYEE
 (EMP_ID,EMP_NAME,DEPARTMENT,MANAGER_ID) 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.EMP_NAME AS [EMPLOYEE NAME], E2.EMP_NAME AS
 [MANAGER NAME],E1.DEPARTMENT AS [EMPLOYEE_DEPT],

 E2.DEPARTMENT AS [MANAGER_DEPT]
 FROM EMPLOYEE AS E1
 LEFT
 OUTER
 JOIN
 EMPLOY
 EE AS E2
 ON
E1.MANAGER_ID = E2.EMP_ID;
```

Financial Forecast Matching with Fallback Strategy

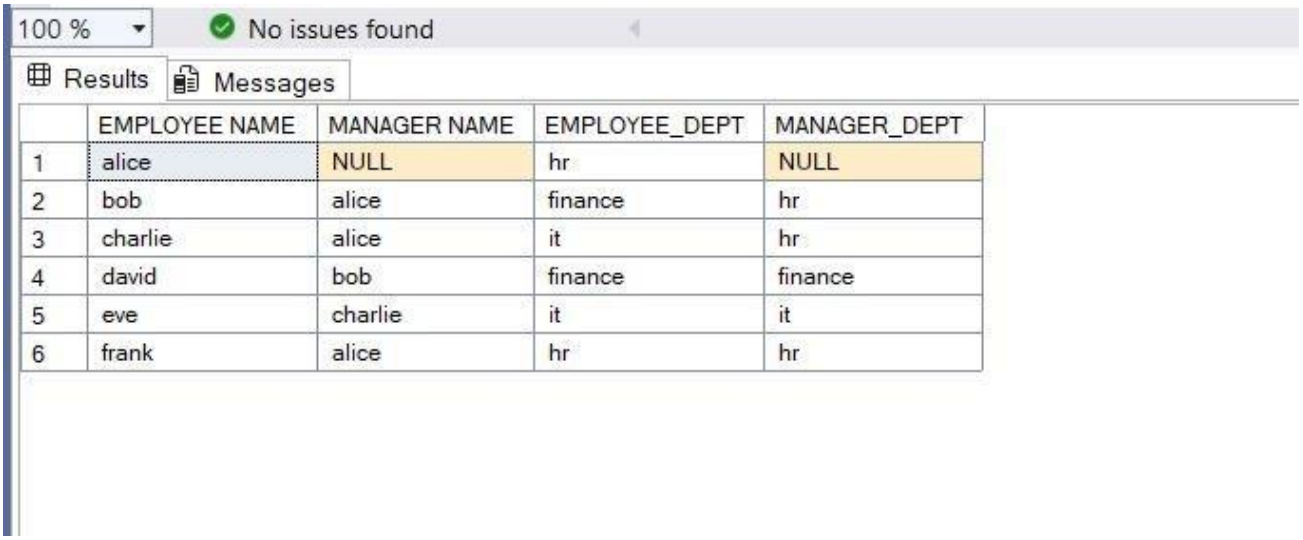
```
CREATE TABLE Year_tbl (
        ID INT,
        YEAR
        INT, NPV
        INT
    );
CREATE TABLE Queries (
        ID INT,
        YEAR
        INT
    );

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);

Q.ID, Q.YEAR,
ISNULL(Y.NP,0)
AS NPV FROM
Queries AS Q LEFT
OUTER JOIN
Year_tbl AS Y ON
Q.ID = Y.ID AND Q.YEAR = Y.YEAR;
```

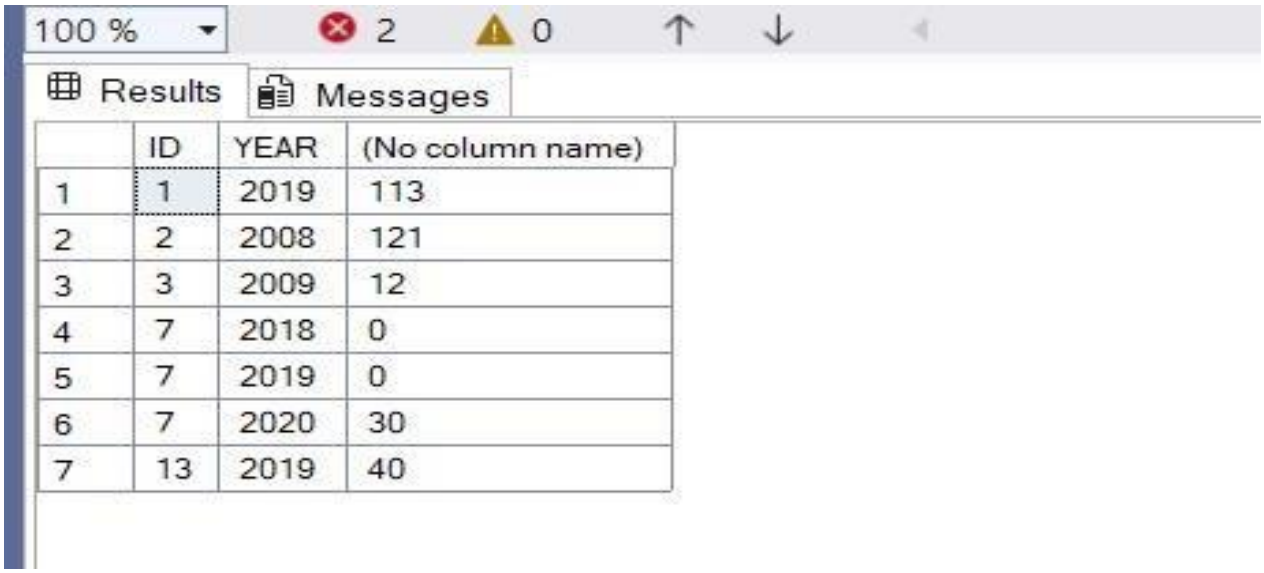
3. Output:



100 % No issues found

Results Messages

	EMPLOYEE NAME	MANAGER NAME	EMPLOYEE_DEPT	MANAGER_DEPT
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



100 % 2 0

Results Messages

	ID	YEAR	(No column name)
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