



DEPARTMENT OF

COMPUTER SCIENCE & ENGINEERING

EXPERIMENT - 2

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1. AIM: Ques 1 :- Organizational Hierarchy Explorer (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.



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EmplID	Ename	Department	ManagerID
1	Alice	HR	NULL
2	Bob	Finance	1
3	Charlie	IT	1
4	David	Finance	2
5	Eve	IT	3
6	Frank	HR	1

2. TOOLS USED:- MS SSMS & Microsoft SQL Server 3. SQL CODE:

```
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_Manager FOREIGN KEY (ManagerID) REFERENCES Employee(EmpID);

INSERT INTO Employee (EmpID, EmpName, Department, ManagerID)
VALUES
(1, 'Alice', 'HR', NULL),
(2, 'Bob', 'Finance', 1),
```



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```
(3, 'Charlie', 'IT', 1),  
(4, 'David', 'Finance', 2),  
(5, 'Eve', 'IT', 3),  
(6, 'Frank', 'HR', 1);
```

SELECT

```
E.EmpName AS [EmployeeName],  
E.Department AS [EmployeeDept],  
M.EmpName AS [Manager Name],  
M.Department AS [ManagerDept]  
  
FROM Employee AS E  
  
JOIN Employee AS M  
ON E.ManagerId = M.EmpID;
```

4. OUTPUT:

	EmployeeName	EmployeeDept	Manager Name	ManagerDept
1	Bob	Finance	Alice	HR
2	Charlie	IT	Alice	HR
3	David	Finance	Bob	Finance
4	Eve	IT	Charlie	IT
5	Frank	HR	Alice	HR

5. Ques 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:



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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.

ID	YEAR	NPV	ID	YEAR
1	2018	100	1	2019
7	2020	30	2	2008
13	2019	40	3	2009
1	2019	113	7	2018
2	2008	121	7	2019
3	2009	12	7	2020
11	2020	99	13	2019
7	2019	0		

Year Table

Queries Table

6. SQL CODE:-

```
CREATE TABLE YEARS_TBL(  
ID INT,  
YEAR INT,  
NPV INT  
)  
INSERT INTO YEARS_TBL(ID, YEAR, NPV)  
VALUES  
(1,2018,100), (7,2020,30),  
(13,2019,40),  
(1,2019,113),  
(2,2008,121), (3,2002,12),  
(11,2020,99),  
(7,2019,0);
```

```
CREATE TABLE QUERIES_TBL(  
ID INT,  
YEAR INT
```



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

```
SELECT Q.* ,ISNULL(Y.NPV,0) AS [NPV]  
FROM  
YEARS_TBL AS Y  
RIGHT OUTER JOIN  
QUERIES_TBL AS Q  
ON  
Y.ID = Q.ID  
AND  
Y.YEAR = Q.YEAR
```

7. OUTPUT

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