Experiment 2

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1. **Aim :** To demonstrate the use of self-joins and conditional joins in SQL for managing hierarchical employee relationships and performing conditional lookups using LEFT JOIN and IF NULL across two related tables.

   a. Employee-Manager Hierarchy Using Self-Join
   b. Conditional Join Between Financial Tables

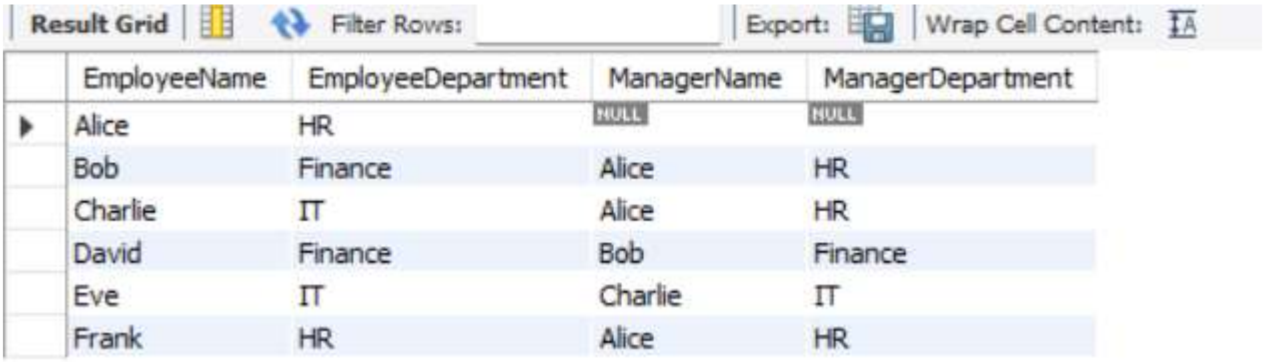
2. **Objective:**
   - To design and populate relational tables with hierarchical and temporal data.
   - To perform a self-join on an employee table to retrieve manager-employee relationships.
   - To implement a conditional LEFT JOIN between two tables to handle non-matching records.
   - To apply the IFNULL function to handle missing values in joined queries.
   - To practice using joins for querying structured business-related datasets.

3. **DBMS script and output**

   a.

```
CREATE DATABASE company;
USE company;
CREATE TABLE employee (
empid INT PRIMARY KEY,
ename VARCHAR(50),
department VARCHAR(50),
managerid INT
);
INSERT INTO employee (empid, ename, department, managerid) 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
e.ename AS EmployeeName,
e.department AS EmployeeDepartment,
m.ename AS ManagerName,
m.department AS ManagerDepartment
FROM
employee e
LEFT JOIN
employee m ON e.managerid = m.empid;
```



EmployeeName	EmployeeDepartment	ManagerName	ManagerDepartment
Alice	HR	NULL	NULL
Bob	Finance	Alice	HR
Charlie	IT	Alice	HR
David	Finance	Bob	Finance
Eve	IT	Charlie	IT
Frank	HR	Alice	HR

b.

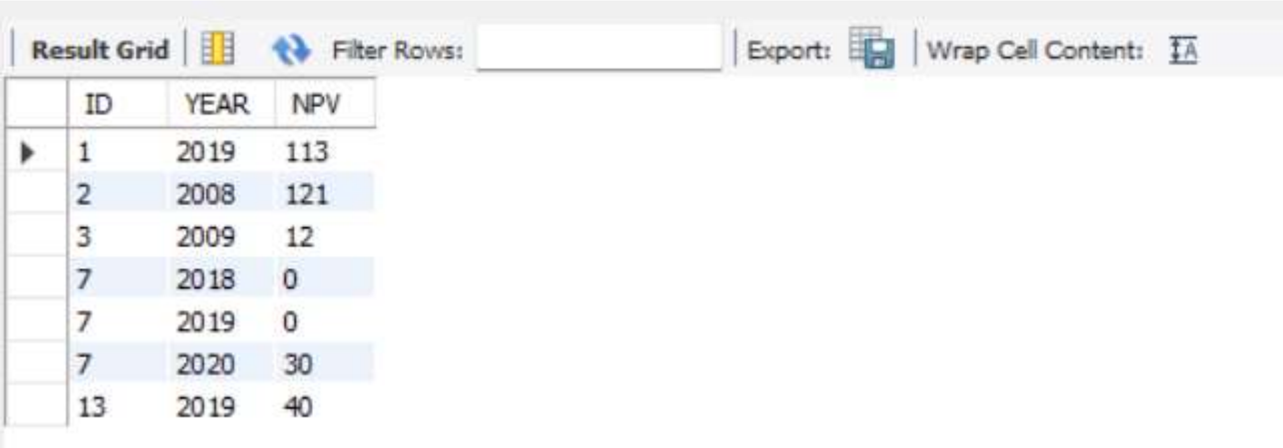
```
CREATE DATABASE company2;
USE company2;
CREATE TABLE Year_tbl (
ID INT,
YEAR INT,
NPV INT
);

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,
IFNULL(y.NPV, 0) AS NPV
FROM
Queries q
LEFT JOIN
Year_tbl y ON q.ID = y.ID AND q.YEAR = y.YEAR;
```



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

4. Learning Outcomes (What I have Learnt):

- Understand how to model and query hierarchical relationships using self-joins.
- Learn to perform LEFT JOINs to include unmatched records from one table.
- Apply composite join conditions on multiple columns (e.g., ID and YEAR).
- Use IFNULL to handle NULL values in result sets for reporting purposes.
- Develop SQL skills for solving real-world data retrieval scenarios in organizations.