



Experiment 2

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1. Aim:

- a) 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.

- b) 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:

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

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.Objective:

- To understand how to use JOINS in SQL.
- To understand the basic SQL Queries.
- To generate hierarchical reports from self-referencing tables.

3.DBMS script and output:

```
1.
use assessment;

CREATE TABLE Employee (
    EmpID INT,
    Ename VARCHAR(100),
    Department VARCHAR(100),
    ManagerID INT
);

INSERT INTO Employee VALUES
(1, 'Riya', 'Admin', NULL),
(2, 'Kunal', 'Accounts', 1),
(3, 'Meena', 'Tech', 1),
(4, 'Arjun', 'Accounts', 2),
(5, 'Sneha', 'Tech', 3),
(6, 'Varun', 'Admin', 1);

SELECT
    E1.Ename AS "Employee Name",
    E2.Ename AS "Manager Name",
    E1.Department AS "Employee Department",
    E2.Department AS "Manager Department"
FROM
    Employee AS E1
LEFT JOIN
    Employee AS E2
ON E1.ManagerID = E2.EmpID;
```

| | Employee Name | Manager Name | Employee Department | Manager Department |
|---|---------------|--------------|---------------------|--------------------|
| ▶ | Riya | NULL | Admin | NULL |
| | Kunal | Riya | Accounts | Admin |
| | Meena | Riya | Tech | Admin |
| | Arjun | Kunal | Accounts | Accounts |
| | Sneha | Meena | Tech | Tech |
| | Varun | Riya | Admin | Admin |

```
2.
use assessment;
CREATE TABLE Year_tbl (
    ID INT,
    YEAR INT,
```



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```
        NPV INT
    );

CREATE TABLE Queries (
    ID INT,
    YEAR INT
);

INSERT INTO Year_tbl (ID, YEAR, NPV) VALUES
    (2, 2017, 95),
    (4, 2020, 55),
    (6, 2018, 120),

    (2, 2018, 88),
    (3, 2016, 110),
    (5, 2015, 15),
    (4, 2019, 42),
    (6, 2017, 60);

INSERT INTO Queries (ID, YEAR) VALUES
    (2, 2018),
    (3, 2016),
    (4, 2020),
    (4, 2019),
    (6, 2017),
    (6, 2019),
    (1, 2021);

SELECT
    Q.ID,
    Q.YEAR,
    IFNULL(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;
```

| | ID | YEAR | NPV |
|---|----|------|-----|
| ► | 2 | 2018 | 88 |
| | 3 | 2016 | 110 |
| | 4 | 2020 | 55 |
| | 4 | 2019 | 42 |
| | 6 | 2017 | 60 |
| | 6 | 2019 | 0 |
| | 1 | 2021 | 0 |



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4. Learning outcomes:

- You will be able to write basic SQL queries.
- You will learn to perform JOINS in SQL.
- You will understand how to implement foreign keys.