



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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Experiment 2

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Subject Name: ADBMS

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1. Aim:

- To design and implement normalized relational database schemas using SQL for employee manager and financial data scenarios.
- To establish self-referencing and standard foreign key relationships between tables.
- To retrieve specific data using JOIN operations and handle missing values using functions like ISNULL().

Part A – Medium Level:

- To create a table Employee_tbl to capture employee details along with their reporting manager.
- To implement a self-join on Employee_tbl to display employee and their manager details. • To use a LEFT OUTER JOIN to ensure employees without a manager (i.e., top-level managers) are also included in the result.
- To retrieve and display employee name, manager name, and their respective departments.

Part B – Hard Level:

- To create two tables Year_tbl and Queries for tracking financial Net Present Value (NPV) by year and ID.
- To insert multiple year-wise NPV values for various IDs.
- To query specific combinations of ID and year using a LEFT JOIN.
- To handle missing NPV values using the ISNULL() function, ensuring zero is shown when no record exists.

2. Objective:

To understand and apply self-joins in SQL to relate rows within the same table, such as employee-manager relationships.

To design and populate relational tables for temporal financial data, enabling timeseries queries.

To retrieve data using outer joins and display comprehensive information, including



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unmatched rows.

To utilize SQL functions like ISNULL() for handling NULL values in results.

To enhance skills in data modeling, joining strategies, and conditional data retrieval in SQL Server.

3. ADBMS script and output:

MEDIUM-LEVEL PROBLEM

```
CREATE TABLE Employee_tbl (
```

```
    EmpID INT,
```

```
    EmpName VARCHAR(100),
```

```
    Dept VARCHAR(100),
```

```
    Manager_ID INT
```

```
);
```

```
INSERT INTO Employee_tbl 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.EmpName AS [EMPLOYEE NAME],
```

```
    E2.EmpName AS [MANAGER NAME],
```

```
    E1.Dept AS [EMPLOYEE DEPARTMENT],
```



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E2.Dept AS [MANAGER DEPARTMENT]

FROM

Employee_tbl AS E1

LEFT OUTER JOIN

Employee_tbl AS E2

ON

E1.Manager_ID = E2.EmpID;

HARD LEVEL PROBLEM:

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),



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(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;



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OUTPUTS:

Employee Name	Manager Name	Employee Department	Manager Department
Bob	Alice	Finance	HR
Charlie	Alice	IT	HR
Frank	Alice	HR	HR
David	Bob	Finance	Finance
Eve	Charlie	IT	IT
Alice	NULL	HR	NULL

Figure 1: Medium Level Problem

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

Figure 2: Hard level Problem