DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

CHANDIGARH UNIVERSITY

Discover. Learn. Empower.

Experiment 1.1

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Subject Name: ADBMS **Subject Code:** 23CSP-333

1. Experiment Name/Objective:

Medium Level

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.

Hard Level

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:

```
--Medium Problem

create table employee1
(Emp_id int primary key,Emp_name varchar(max),Department varchar(max),managerid int)
insert into employee1
(Emp_id,Emp_name,Department,managerid)
values(1,'Alice','HR',NULL),(2,'Bob','Finanace',1),(3,'Charlie','IT',1),
(4,'David','Finance',2),(5,'Fra','IT',3),(6,'Frank','HR',1)
alter table employee1 add constraint fy_key foreign key (managerid) references employee1(Emp_id)

select e1.Emp_name as [Employee_Name],e1.Department as [Employee_Dep],e2.Emp_name as [Manager_Name], e2.Department as [Manager_Dep]
from employee1 as e1
left outer join employee1 as e2
on e1.managerid=e2.Emp_id

--Hard Problem


create table year_tbl(id int,[year] int,npv int)
create table query_tbl(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 query_tbl(id,[year]) values
(1,2019),(2,2008),(3,2009),(7,2018),(7,2019),(7,2010),(13,2019)

select q.id,q.[year],ISNULL(y.npv,0) as npv
from query_tbl as q
left outer join year_tbl as y
```

on q.id=y.id and q.[year]=y.[year]

6. **Output:**

	Emp_id	Emp_name	Department	managerid
1	1	Alice	HR	NULL
2	2	Bob	Finanace	1
3	3	Charlie	IT	1
4	4	David	Finance	2
5	5	Fra	IT	3
6	6	Frank	HR	1

	Employee_Name	Employee_Dep	Manager_Name	Manager_Dep
1	Alice	HR	NULL	NULL
2	Bob	Finanace	Alice	HR
3	Charlie	IT	Alice	HR
4	David	Finance	Bob	Finanace
5	Fra	IT	Charlie	IT
6	Frank	HR	Alice	HR

	id	year	npv
1	1	2018	100
2	7	2020	30
3	13	2019	40
4	1	2019	113
5	2	2008	121
6	3	2009	12
7	11	2020	99
8	7	2019	0

	id	year
1	1	2019
2	2	2008
3	3	2009
4	7	2018
5	7	2019
6	7	2010
7	13	2019

	id	year	npv
1	1	2018	100
2	7	2020	30
3	13	2019	40
4	1	2019	113
5	2	2008	121
6	3	2009	12
7	11	2020	99
8	7	2019	0

7. **Learning Outcomes:**
    - Understanding of Table Design and Relationships
    - Proficiency in SQL JOIN Operations
    - Mastery of Subqueries for Filtering Data