Database System & Web Lab (15B17CI372)
SQL-Joins and Nested Queries
Week 6

Consider the following relational schema. An employee can work in more than one department; the pct time field of the Works relation shows the percentage of time that a given employee works in a given department.

Emp (eid: integer, ename: string, age: integer, salary: real, gender: string)
Works (eid: integer, did: integer, pct time: integer)
Dept (did: integer, dname: string, budget: real, managerid: integer)

Design the following queries using either JOIN or NESTED queries:

1. Print the names and ages of each employee who works in both the Hardware department and the Software department.

```
SELECT E.ename, E.age FROM Emp E, Works W1, Works W2, Dept D1, Dept D2 WHERE E.eid = W1.eid AND W1.did = D1.did AND D1.dname = 'Hardware' AND E.eid = W2.eid AND W2.did = D2.did AND D2.dname = 'Software
```

2. For each department with more than 20 full-time-equivalent employees (i.e., where the part-time and full-time employees add up to at least that many full-time employees), print the did together with the number of employees that work in that department.

```
SELECT W.did, COUNT (W.eid) FROM Works W GROUP BY W.did HAVING 2000 < ( SELECT SUM (W1.pct time) FROM Works W1 WHERE W1.did = W.did )
```

3. Print the name of each employee whose salary exceeds the budget of all of the departments that he or she works in.

```
SELECT E.ename FROM Emp E WHERE E.salary > ALL (SELECT D.budget FROM Dept D, Works W WHERE E.eid = W.eid AND D.did = W.did)
```

4. Find the managerids of managers who manage only departments with budgets greater than Rs 1 million.

```
SELECT DISTINCT D.managerid FROM Dept D WHERE 1000000 < ALL (SELECT D2.budget FROM Dept D2 WHERE D2.managerid = D.managerid )
```

5. Find the enames of managers who manage the departments with the largest budgets.

```
SELECT E.ename FROM Emp E WHERE E.eid IN (SELECT D.managerid FROM Dept D WHERE D.budget = (SELECT MAX (D2.budget) FROM Dept D2))
```

6. If a manager manages more than one department, he or she controls the sum of all the budgets for those departments. Find the managerids of managers who control more than Rs 5 million.

```
SELECT D.managerid FROM Dept D WHERE 5000000 < (SELECT SUM (D2.budget) FROM Dept D2
WHERE D2.managerid = D.managerid )
```

7. Find the managerids of managers who control the largest amounts.

```
SELECT DISTINCT tempD.managerid FROM (SELECT DISTINCT D.managerid, SUM (D.budget) AS
tempBudget FROM Dept D GROUP BY D.managerid ) AS tempD WHERE tempD.tempBudget =
(SELECT MAX (temp
```

8. For each department whose average employee salary is more than Rs 30,000 retrieve the department name and the number of employees working for that department.

```
SELECT E.ename FROM Emp E, Dept D WHERE E.eid = D.managerid GROUP BY E.Eid, E.ename
HAVING EVERY (D.budget > 1000000) AND ANY (D.budget < 5000000)
```