

## ICS 324 HW 3 - Solution

Use the following schema to answer the following question in SQL.

**Employee(eid, name, office)**  
**Manager(eid, mid)**

Each employee has a unique key, eid. An employee may have several managers, who are, in turn, employees: both attributes eid and mid in Manager(eid, mid) are foreign keys to Employee.

1. Write a query that retrieves all employees that have two or more managers. Your query should return the eid's and the names.

```
SELECT eid, name
FROM Employee
WHERE eid IN(
    SELECT eid
    FROM Manager
    GROUP BY eid
    HAVING COUNT(*) >=2 );
```

2. An independent employee is an employee without a manager. (For example, the CEO is independent.) Write a query that retrieves all independent employees; you should return their eid and their names.

```
SELECT EID, name
FROM Employee
WHERE eid NOT IN (
    SELECT eid
    FROM Manager);
```

3. Retrieve the office of all managers of the employee called 'Alice'. If there are multiple employees called Alice, or if one of them has several managers, you have to return all their offices.

```
SELECT office
FROM employee
WHERE eid in
(
    SELECT mid
    FROM manager
    WHERE eid in
    (
        SELECT eid
        FROM employee
        WHERE name='Alice' ) );
```

4. Find all managers for which all the employees they manage share the same office. Your query should return their eid, their name, and their offices.

```
SELECT *
FROM Employee e1
WHERE e1.eid IN
(
SELECT m1.mid
FROM manager m1
WHERE 2 <=
(
SELECT COUNT(distinct e2.office)
FROM employee e2, manager m2
WHERE e2.eid = m2.eid
AND m2.mid = m1.mid );
```

5. A manager is an employee who manages at least one other employee. A second-level manager is a manager who manages only managers. Write a query to return all second-level managers; your query should return their eid's and their names.

```
SELECT eid, name
FROM Employee
WHERE eid IN
(
Select mid
FROM manager
WHERE mid NOT IN
(
SELECT mid
manager
WHERE eid NOT in
(
SELECT mid
FROM manager)))
```