

SOFTENG 351: Lab #5

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1)

a)

```

SELECT Dname, COUNT(*)
FROM DEPARTMENT, EMPLOYEE
WHERE Dno=Dnumber
GROUP BY Dnumber
HAVING AVG(Salary) > 30000;

```

Dname	COUNT(*)
Research	4
Administration	3
Headquarters	1

b)

The following statement assumes Dname to be a key.

```

SELECT Dname, COUNT(*)
FROM DEPARTMENT, EMPLOYEE
WHERE Dno=Dnumber AND Sex="M" AND Dno IN (
    SELECT Dname, COUNT(*)
    FROM DEPARTMENT, EMPLOYEE
    WHERE Dno=Dnumber
    GROUP BY Dnumber
    HAVING AVG(Salary) > 30000
)
GROUP BY Dname;

```

Dname	COUNT(*)
Research	3
Administration	1
Headquarters	1

2)

a)

$$\pi_{Fname, Lname}(\sigma_{(Dno=4 \text{ AND } Salary > 40000) \text{ OR } (Dno=5 \text{ AND } Salary < 30000)}(EMPLOYEE))$$

Fname	Lname
Jennifer	Wallace
Joyce	English

b) $DEP4_EMPS \leftarrow \sigma_{Dno=4}(EMPLOYEE)$ $RESULT1 \leftarrow \pi_{Ssn}(DEP4_EMPS)$ $RESULT2(Ssn) \leftarrow \pi_{Super_ssn}(DEP4_EMPS)$ $RESULT \leftarrow RESULT1 \cup RESULT2$

Ssn
999887777
987654321
987987987
888665555

c) $RESULT(First_Name, Last_Name) \leftarrow \pi_{Fname, Lname}(\sigma_{Super_ssn \text{ IS NULL AND Salary} > 50000}(EMPLOYEE))$

Fname	Lname
James	Borg