**COMP 353 : Assignment 4**

**Presented to :**

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**Question 1**

Consider a database scheme consisting of the following relation schemes:

EMPLOYEE (eid, ename, age, salary)

DEPARTMENT(did, dept\_name, budget, manager\_id)

WORKS (eid, did, hours\_per\_week)

The semantics of the scheme should be clear from the identifiers used. The key attributes are underlined. Department.manager\_id is a subset of employee.eid. An employee may manage more than one department.

1. Express the following queries in SQL:

a. Get details on employees who work in more than one department.

SELECT distinct E.eid, E.ename, E.age, E.salary

FROM Employee E, Works W1, Works W2

WHERE E.eid = W1.eid and W1.eid = W2.eid and W1.did < > W2.did

b. Who are the managers who work also in a department that they do not manage.

SELECT distinct D.manager\_id

FROM Department D, Works W

WHERE D.did < > W.did and D.manager\_id = W.eid

c. Get the id’s of employees who work in department 203 and also in department 302.

SELECT W.eid

FROM Works W

WHERE W.did = 203

and EXISTS (SELECT W2.did

FROM Works W2

WHERE W2.did = 302 and W.eid = W2.eid)

d. Find those employees who do not work in the department managed by John Doe.

SELECT W.eid

FROM Works W, Employee E, Department D

WHERE D.did = W.did and D.manager\_id = E.eid and E.ename < > "John Doe"

and EXISTS (SELECT D2.did

FROM Department D2, Employee E2, Works W2

WHERE D2.manager\_id = E2.eid and E2.name = "John Doe" and W2.did = D2.did and W2.eid < > W.eid)

e. Find details on the employee(s) who work(s) the maximum number of hours per week in department 101.

SELECT E.eid, E.ename, E.age, E.salary

FROM Employee E, Works W

WHERE E.eid = W.eid and W.did = 101 and W.hours\_per\_week > ALL

(SELECT W2.hours\_per\_week

FROM Works W2

WHERE W2.did = W.did)

f. For each department, find the Department name, the total salary of employees working in the department and the budget of the department.

SELECT D.dept\_name, D.budget, SUM(E.salary)

FROM Department D, Employee E, Works W

WHERE D.did = W.did and W.eid = E.eid

GROUP BY D.dept\_name

g. Get the id’s and names of employees who work in all departments.

SELECT E.ename, W.eid

FROM Employee E, Works W

WHERE W.eid = E.eid

and NOT EXIST( SELECT D.did

FROM Department D

WHERE NOT EXIST ( SELECT W1.eid

FROM Works W1

WHERE W1.eid = W.eid and W1.did = D.did))

**Question 2**

Consider a DB schema consisting of the following relation schemes:

Patient (pid, pname, age, city)

Doctor (did, dname, specialization, city)

Clinic (cid, cname, city)

Works\_in (did, cid, hours\_per\_week)

Consults (pid, did, cid, date, illness)

Now, express the following queries in SQL:

1. Get details on patients who have consulted all the doctors who work in the same city they live in.

SELECT P.pid, P.pname, P.age, P.city

FROM Patient P, Doctor D, Consults C

WHERE P.pid = C.pid and C.did = D.did and P.city = D.city

2. List those doctors’ id who do not work in Victoria (clinic name) for all clinics of Montreal.

SELECT distinct D.did

FROM Doctor D, Works\_In W, Clinic C

WHERE D.did = W.did and W.cid = C.cid and C.city = 'Montreal'

and NOT EXIST

(SELECT C2.name

FROM Clinic C2

WHERE C2.cname = 'Victoria')

3. Find those patients’name who have never been to a clinic in a city other than the one he/she lives in.

SELECT P.pname

FROM Patient P, Consults CO, Clinic CL

WHERE P.pid = CO.pid and CO.cid = CL.cid and P.city = CL.city

and NOT EXIST

(SELECT CL2.city

FROM Clinic CL2

WHERE CL2.city < > P.city)