CMSC 461
Homework 2 Solutions - SQL and VMS/RDB
Section 101 - Out September 30, Due October 7
Section 201 - Out September 29, Due October 6

The Assignment

The following problems are from the text. These problems refer to the company database in the text.

1. **Views:** 7.21 b, c.

```
!/* 7.21 b */
create view research_emps(emp_fname, emp_lname, sup_fname,
   sup_lname, emp_salary)
  as select x.fname, x.lname, y.fname, y.lname, x.salary
            from employee x, employee y, department
            where dnumber=x.dno and dname='Research' and y.ssn=x.superssn;

! /* 7.21 c */
create view proj_info(proj_name, con_dept_name, no_of_emps, tot_hrs)
  as select pname, dname, count(*), sum(hours)
        from project, department, works_on
        where dnum=dnumber and pno=pnumber
        group by pname, dname;
```

2. **Select:** 7.13 a, c, d, e, j, k.

```
!/* Part a **********/
create view prodx as
       select pnumber from project
       where pname='ProductX' ;
select fname, minit, lname from prodx, works_on, employee
       where pnumber=pno and essn=ssn and hours > 10 and dno=5 ;

!/*** Part C ************/
select fname, minit, lname from
       employee
       where  superssn in
             ( select ssn
                  from employee
                  where fname='Franklin' and minit='T' and
                  lname='Wong' );
! OR
select x.fname, x.minit, x.lname
       from employee x, employee y
       where y.ssn=x.superssn and y.lname='Wong' and y.fname='Franklin';
```

```
!/** Part d **/
select pno, pname, sum(hours)
       from project,works_on
       where pnumber=pno
       group by pno, pname ;

!/*** Part e **/
select fname, minit, lname
       from employee
       where not exists
       ( select * from project
              where  not exists
                  (select * from works_on
                      where pno=pnumber and ssn=essn) ) ;

!/** Part j ***/
select fname, minit, lname
        from employee
        where exists
              (select * from department where mgrssn=ssn)
        and not exists
              (select * from dependent where essn=ssn) ;

!/**** Part k ***/
select fname, minit, lname
       from project,works_on, employee
       where pnumber=pno and essn=ssn
       and not exists
       ( select ssn, dlocation
            from employee, dept_locations
            where dno=dnumber and essn=ssn and plocation=dlocation);
```

3. **Capabilities of SQL:** 7.14 a, b.
   Note for part b: The question is asking if a single SQL query can be used. If it can't, can view(s) be used?

```
!/* 7.14 a */
select dname, count(*)
       from employee, department
       where dno=dnumber
       group by dname
       having avg(salary)>30000;
!/* 7.14 b */
select dname,count(*)
       from department, employee
       where dnumber=dno and sex='M' and dno in
                    (select dno
                        from employee
                        group by dno
                        having avg(salary)>30000)
        group by dname;
```

4. **Insert, delete, update:** 7.15 e, f, k.

```
!/* 7.15 e */
insert into dependent
   values ('453453453', 'John', 'M', '12-Dec-60','Spouse');

!/* 7.15 f */
delete from works_on
   where essn='333445555';

!/* 7.15 k */
update works_on
   set hours=5.0
   where essn='999887777' and pno=10;
```