**4.10)**

1. SELECT DISTINCT e.fname, e.lname  
   FROM employee e, project p, works\_on w  
   WHERE e.dno=5 AND w.essn=e.ssn AND p.pname='ProductX' AND w.pno=p.pnumber AND hours>10;
2. SELECT DISTINCT e.fname, e.lname  
   FROM employee e, dependent d  
   WHERE e.fname=d.dependent\_name AND e.ssn=d.essn;
3. SELECT DISTINCT e.fname, e.lname  
   FROM employee e, employee s  
   WHERE e.superssn=s.ssn AND s.fname=’Franklin’ AND s.lname=’Wong’;

**4.15)**

1. When the command is executed everything is deleted out of the database because everything is linked to ‘Borg’ either directly or indirectly because he is the head of the company.
2. It is better to SET NULL in the case of EMPSUPERFK constraint ON DELETE because whenever an employee is deleted, where they are referenced from the FK is set to null rather than deleting everything linked to it.

**5.5)**

1. SELECT dname, COUNT(\*) num\_of\_employees  
   FROM employee, department  
   WHERE dno=dnumber AND (SELECT AVG(salary) FROM employee)>30000  
   GROUP BY dname;

|  |  |
| --- | --- |
| DNAME | NUM\_OF\_EMPLOYEES |
| Administration | 3 |
| Headquarters | 1 |
| Research | 4 |

1. We can specify this query in SQL but a nested query is not needed here since we are looking at individual salaries and not average salaries of the males.  
     
   SELECT dname, COUNT(\*) num\_of\_males  
   FROM employee, department  
   WHERE dno=dnumber AND sex=’M’ AND salary>30000  
   GROUP BY dname;

|  |  |
| --- | --- |
| DNAME | NUM\_OF\_MALES |
| Research | 2 |
| Headquarters | 1 |

**5.7)**

1. SELECT fname, lname  
   FROM employee  
   WHERE dno=(SELECT dno  
    FROM employee  
    WHERE salary=(SELECT MAX(salary)  
    FROM employee));
2. SELECT fname, lname  
   FROM employee  
   WHERE superssn IN (SELECT ssn  
    FROM employee  
    WHERE superssn =’888665555’);
3. SELECT fname, lname  
   FROM employee  
   WHERE salary>10000+(SELECT MIN(salary)  
    FROM employee);

**5.8)**

1. CREATE VIEW department1(department, manager\_first, manager\_last, salary)  
   AS SELECT dname, fname, lname, salary  
   FROM employee, department  
   WHERE ssn=mgrssn;
2. CREATE VIEW research\_dept(efirst, elast, sfirst, slast, esalary)  
   AS SELECT e.fname, e.lname, s.fname, s.lname, e.salary  
   FROM employee e, employee s, department  
   WHERE dname=’Research’ AND e.dno=dnumber and s.ssn=e.superssn;
3. CREATE VIEW project1(pname, dname, num\_of\_employees, total\_hours)  
   AS SELECT pname, dname, COUNT(\*), SUM(hours)  
   FROM department, project, works\_on  
   WHERE dnum=dnumber AND pno=pnumber  
   GROUP BY pname, dname;
4. CREATE VIEW project2(pname, dname, num\_of\_employees, total\_hours)  
   AS SELECT pname, dname, COUNT(\*), SUM(hours)  
   FROM department, project, works\_on  
   WHERE dnum=dnumber AND pno=pnumber  
   GROUP BY pname, dname  
   HAVING COUNT(\*)>1;

**5.9)**

1. The query is allowed.

|  |  |  |  |
| --- | --- | --- | --- |
| D | C | TOTAL\_S | AVERAGE\_S |
| 1 | 1 | 55000 | 55000 |
| 5 | 4 | 133000 | 33250 |
| 4 | 3 | 93000 | 31000 |

1. The query is allowed.

|  |  |
| --- | --- |
| D | C |
| 5 | 4 |

1. The query is allowed

|  |  |
| --- | --- |
| D | AVERAGE\_S |
| 5 | 33250 |

1. The update is not allowed. “ORA-01732: data manipulation operation not legal on this view”.
2. The update is not allowed. “ORA-01732: data manipulation operation not legal on this view”.