WEEK 7 SQL – Set Operations-Union, intersect and minus

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1. Make a list of all project numbers for projects that involve an employee whose last name is 'Smith', either as a worker or as a manager of the department that controls the project.

```
company=# (SELECT DISTINCT PNUMBER FROM PROJECT,DEPARTMENT,EMPLOYEE WHERE DNUM = DNUMBER AND MGR_SSN = SSN AND LNAME = 'Smith')
company-# UNION
company-# (SELECT DISTINCT PNUMBER FROM PROJECT, WORKS_ON, EMPLOYEE WHERE PNUMBER = PNO AND ESSN = SSN AND LNAME ='Smith');
 pnumber
---------
       1
       2
(2 rows)
```

2. Retrieve the names of the employee who does not have dependents.

```
company=# (SELECT FNAME, LNAME FROM EMPLOYEE)
company-# EXCEPT
company-# (SELECT FNAME, LNAME FROM EMPLOYEE, DEPENDENT WHERE ESSN = SSN);
 fname  |  lname
--------+---------
 Joyce  | English
 James  | Borg
 Ahmed  | Jabbar
 Alicia | Zelaya
 Ramesh | Narayan
(5 rows)
```

3. Retrieve the Social Security numbers of all employees who either work in department 5 or directly supervise an employee who works in department 5

```
company=# SELECT SSN FROM EMPLOYEE WHERE DNO=5
company-# UNION SELECT SUPER_SSN FROM EMPLOYEE WHERE DNO =5;
    ssn
-----------
 123456789
 333445555
 453453453
 666884444
 888665555
(5 rows)
```

4. Using Intersect, find all projects controlled by the department 5 and has employee ssn 123456789 working in that project

```
company=# (SELECT PNUMBER FROM PROJECT WHERE DNUM=5) INTERSECT (SELECT W.PNO FROM WORKS_ON AS W, PROJECT AS P WHERE W.PNO=P.PNUMBER AND W.ESSN='123456789');
 pnumber
---------
       1
       2
(2 rows)
```

5. Using Except find all ssn of employees who work in department 5 but not in Bellaire location

```
company=# SELECT DISTINCT SSN FROM EMPLOYEE WHERE SSN IN (SELECT SSN FROM EMPLOYEE, DEPT_LOCATIONS WHERE DNO=DNUMBER AND DNO=5 EXCEPT ALL (SELECT DISTINCT SSN FROM EMPLOYEE,DEPT_LOCATIONS WHERE DLOCATION='Bella
e'));
   ssn
-----------
 123456789
 333445555
 453453453
 666884444
(4 rows)
```

6. Find the name of the employee who has the same name as the dependent of any employee (use intersect).

```
company=# SELECT FNAME FROM EMPLOYEE INTERSECT (SELECT DEPENDENT_NAME FROM DEPENDENT);
 fname
-------
(0 rows)

company=#
```