Question A

1) SELECT STUDENT\_NAME FROM STUDENT WHERE GENDER="Male" AND BIRTHDATE=’1995-01-01’

2) SELECT STUDENT\_NAME FROM STUDENT ORDERY BY STUDENT\_NAME

WHERE LEN(STUDENT\_NAME)>=5 AND BIRTHDATE>=’1995-01-01’ AND BIRTHDATE<=’2000-01-01’

3) SELECT COURSE\_TITLE FROM COURSE WHERE EXISTS

(SELECT STAFF\_ID FROM STAFF WHERE COURSE.STAFF\_ID=STAFF.STAFF\_ID AND NOT (STAFF\_NAME=’SMITH’ OR STAFF\_NAME=’JONES’)

4) SELECT COUNT(COURSE\_ID), SECTION FROM COURSE GROUP BY SECTION ORDER BY SECTION

5) SELECT STAFF\_NAME FROM STAFF WHERE BOSS\_ID

6) SELECT \* FROM STAFF WHERE SALARY>(SELECT AVERAGE(SALARY) FROM STAFF)

7) SELECT STAFF\_NAME FROM STAFF WHERE STAFF\_ID IN (SELECT BOSS\_ID FROM STAFF) AND DEPARTMENT=’Accounting’

8) SELECT COUNT(DISTINCT STAFF.STAFF\_ID) / (COUNT(COURSE.STAFF\_ID))

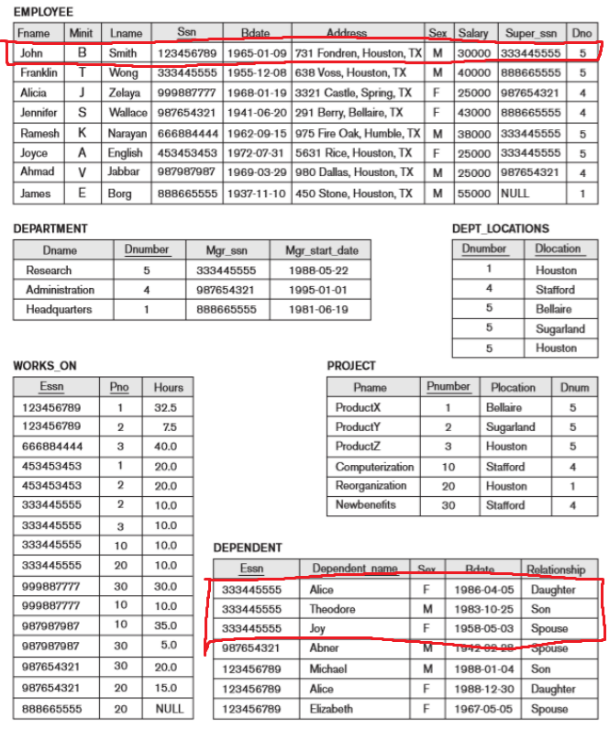
FROM STAFF LEFT JOIN COURSE ON STAFF.STAFF\_ID = COURSE.STAFF\_ID

Question B

Select σ, RENAME ρ, union U, intersection ∩, difference - , cartesian product **x** , project π, join ⋈

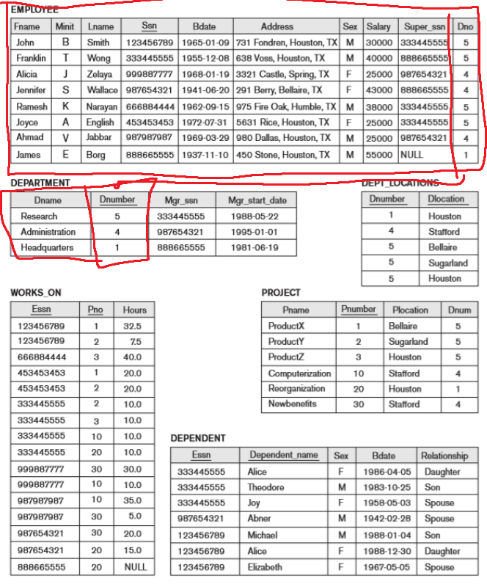
1) EDEPENDENT <- EMPLOYEE ⋈ Ssn=Essn DEPENDENT

RESULT <- π Fname,Lname (EDEPENDENT)

 Then repeat for each one to create the new table

2) SALARY39 <- EMPLOYEE ⋈ Dno=Dnumber AND Salary<39000 DEPARTMENT

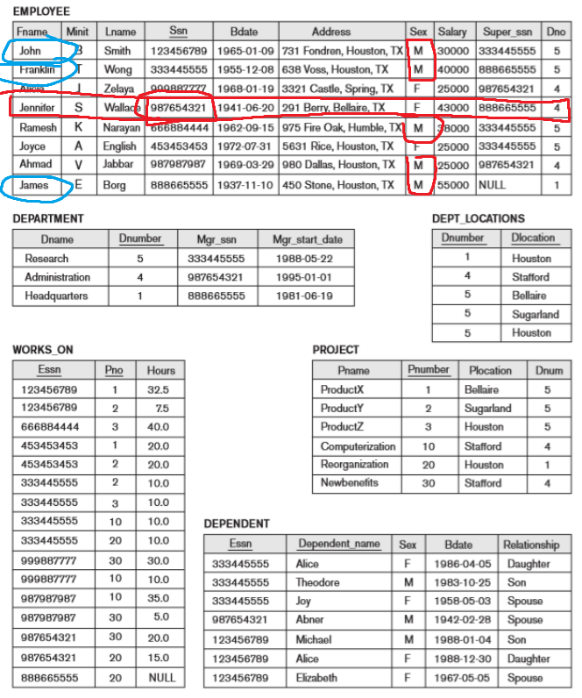
RESULT <- π Fname (σ Dname=’Research’ (SALARY39))



3) JENNI <- σ Fname=’Jennifer’ Lname=’Wallace’ (EMPLOYEE)

JENNI\_SSN <- π Ssn (JENNI)

RESULT <- π Fname (σ Super\_ssn != JENNI\_SSN AND Sex=’M’ (EMPLOYEE))



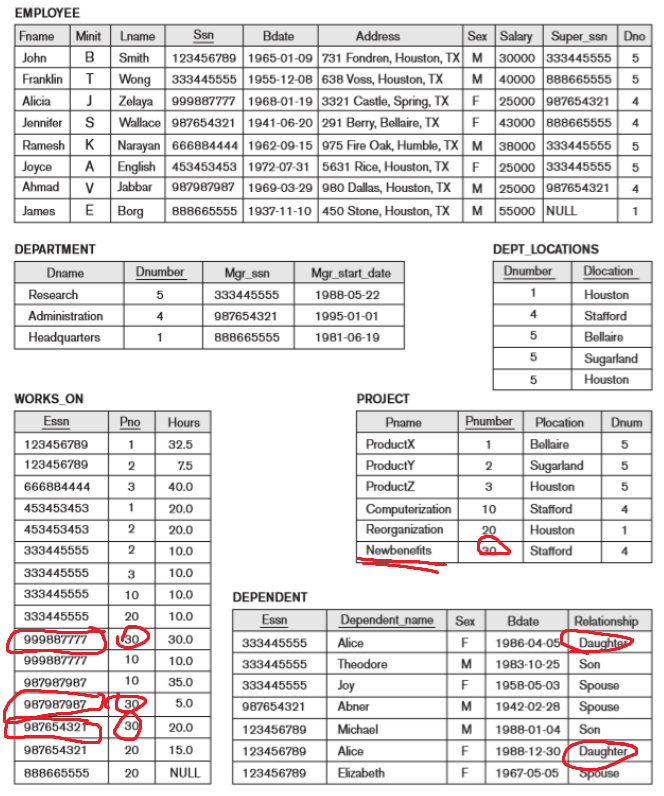
4) FDEPENDENT <- σ Relationship=’Daughter’ (DEPENDENT)

EMP <- EMPLOYEE ⋈ Ssn=Essn FDEPENDENT

NEWB\_NUM <- π Pnumber (σ Pname=’Newbenefits’ PROJECT)

WORKS\_NEWB <- WORKS\_ON ⋈ Pno=NEWB\_NUM PROJECT

RESULT <- π Fname (EMP ∩ WORKS\_NEWB)

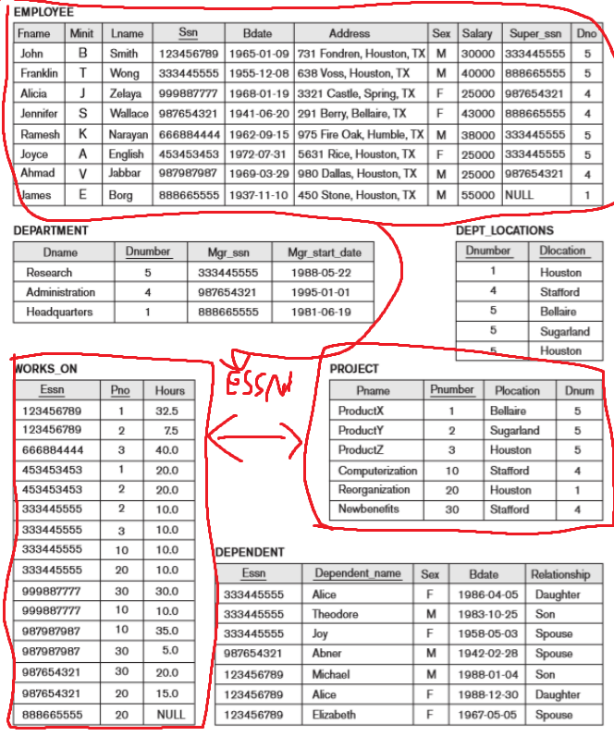


5) PROJE <- π Pno, Essn (WORKS\_ON)

ALL\_PROJ <- π Pnumber (PROJECT)

EMP\_ALL <- PROJE DIVISION ALL\_PROJ

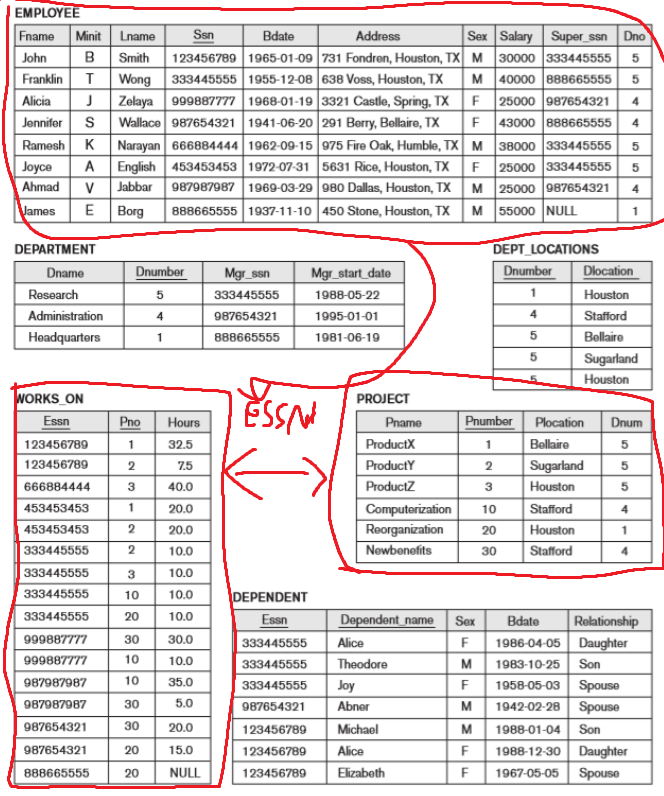
RESULT <- π Fname (EMPLOYEE ∩ EMP\_ALL)



6) PROJE <- π Pno, Essn (WORKS\_ON)

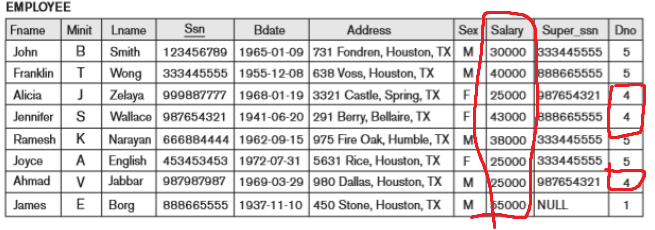
EMP\_NOT <- π Essn (EMPLOYEE) – π Essn (PROJE)

RESULT <- π Fname (EMPLOYEE ∩ EMP\_ NOT)



7) REQ\_EMP <- σ Sex=’M’ AND Dno=’4’ (EMPLOYEE)

RESULT <- π Salary (REQ\_EMP)



8)

9) SDEPENDENT <- σ Relationship=’Spouse’

JOINED <- DEPARTMENT ⋈ Mgr\_ssn = Essn SDEPENDENT

NAME\_LIST <- JOINED ⋈Mgr\_ssn = Ssn EMPLOYEE

RESULT <- π Lname (NAME\_LIST)

