**TASK 3**

**QUESTION 1/HW2**

a/ EMP\_W\_X ← (**Ծ**PNAME='ProductX' (PROJECT)) **I><I** PNUMBER=PNO (WORKS\_ON)

EMP\_WORK\_10 ← (EMPLOYEE) **I><I** SSN=ESSN (**Ծ**HOURS>10 (EMP\_W\_X))

RESULT ← **π** LNAME,FNAME (**Ծ**DNO=5 (EMP\_WORK\_10))

b/ E ← (EMPLOYEE) **I><I** SSN=ESSN AND FNAME=DEPENDENT\_NAME (DEPENDENT)

R ← **π** LNAME,FNAME (E)

c/ WONG\_SSN ← **π** SSN (**Ծ**FNAME='Franklin' AND LNAME='Wong' (EMPLOYEE))

WONG\_EMPS ← (EMPLOYEE) **I><I** SUPERSSN=SSN (WONG\_SSN)

RESULT ← **π** LNAME,FNAME (WONG\_EMPS)

d/ PROJ\_HOURS(PNO,TOT\_HRS) ← PNO **ℑ** SUM HOURS (WORKS\_ON)

RESULT ← **π** PNAME,TOT\_HRS ( (PROJ\_HOURS) **I><I** PNO=PNUMBER (PROJECT) )

e/ PROJ\_EMPS(PNO,SSN) ← **π** PNO,ESSN (WORKS\_ON)

ALL\_PROJS(PNO) ← **π** PNUMBER (PROJECT)

EMPS\_ALL\_PROJS ← PROJ\_EMPS ÷ ALLPROJS

RESULT ← **π** LNAME,FNAME (EMPLOYEE \* EMP\_ALL\_PROJS)

f/ ALL\_EMPS ← **π** SSN (EMPLOYEE)

WORKING\_EMPS(SSN) ← **π** ESSN (WORKS\_ON)

NON\_WORKING\_EMPS ← ALL\_EMPS - WORKING\_EMPS

RESULT ← **π** LNAME,FNAME (EMPLOYEE \* NON\_WORKING\_EMPS)

g/ DEPT\_AVG\_SALS(DNUMBER,AVG\_SAL) ← DNO **ℑ** AVG SALARY (EMPLOYEE)

RESULT ← **π** DNAME,AVG\_SAL ( DEPT\_AVG\_SALS \* DEPARTMENT )

**QUESTION 2/HW2**

a/ R1 ← **π** cno,sid(**Ծ**Term=’Fall 2009’(COURSE **I><I** Sec\_no=Sec\_noENROLL))

R2 ← **π** cno,sid(**Ծ**ctitle=’Automata’(CATALOG **I><I** Cno=Cno R1))

Result ← **π** Fname, Lname(STUDENTS **I><I** sid=sid R2))

**QUESTION 1/HW3 -> QUESTION 2/HW2 as SQL**

a/ SELECT S.fname, S.lname, S.minit

FROM STUDENTS S, CATALOG C, COURSES O, ENROLLS E

WHERE C.ctitle='Automata' AND C.cno=O.cno AND O.term='f96' AND O.term=E.term AND O.secno=E.secno AND E.sid=S.sid

b/ SELECT E.sid

FROM ENROLLS E, COURSES C1, COURSES C2

WHERE E.term=C1.term AND E.secno=C1.secno AND C1.cno='CSc226' AND E.term=C2.term AND E.secno=C2.secno AND C2.cno='CSc227'

c/ SELECT E.sid

FROM ENROLLS E

WHERE NOT E.sid IN

(

SELECT E1.sid

FROM ENROLLS E1

WHERE NOT E1.sid IN

(

SELECT E2.sid

FROM ENROLLS E2, COURSES C1

WHERE C1.cno='csc226' AND C1.term=E2.term AND C1.secno=E2.secno

)

AND NOT E1.sid IN

(

SELECT E3.sid

FROM ENROLLS E3, COURSES C2

WHERE C2.cno='csc227' AND C2.term=E3.term AND C2.secno=E3.secno

)

)

d/ SELECT S.fname,S.lname,S.minit

FROM STUDENTS S

WHERE NOT EXISTS

(

SELECT E.sid

FROM ENROLLS E

WHERE S.sid=E.sid

)

e/ SELECT S.fname,S.lname,S.minit

FROM STUDENTS S

WHERE NOT EXISTS

(

SELECT C.cno

FROM CATALOGS C

WHERE NOT EXISTS

(

SELECT E.sid

FROM COURSES O,ENROLLS E

WHERE C.cno=O.cno AND O.term=E.term AND O.secno=E.secno AND E.sid=S.sid

)

)

**QUESTION 1/HW3 -> QUESTION 3/HW2 as SQL**

a/ SELECT \*

FROM PARTS

WHERE Price<20

b/ SELECT DISTINCT e.ename,z.city

FROM ZIPCODES z, EMPLOYEES e, ORDERS o, ODETAILS od, PARTS p

WHERE z.zip = e.zip AND e.eno = o.eno AND o.ono = od.ono AND od.pno = p.pno AND p.price > 50

c/ SELECT c1.cno, c2.cno

FROM CUSTOMERS c1, CUSTOMERS c2

WHERE c1.zip = c2.zip AND c1.cno < c2.cno

d/ SELECT DISTINCT c.cname

FROM CUSTOMERS c, ORDERS o, EMPLOYEES e, ZIPCODES z

WHERE c.cno = o.cno AND o.eno = e.eno AND e.zip = z.zip AND z.city = 'Wichita'

e/ SELECT DISTINCT Cname

FROM CUSTOMERS c, ORDERS o, PARTS p, ODETAILS od

WHERE c.Cno=o.Cno AND o.Ono=od.Ono AND od.Pno=p.Pno AND Price<20

f/

g/

**QUESTION 1/HW3 -> QUESTION 5/HW2 as SQL**

a/ SELECT s.Sno

FROM SUPPLIER s JOIN PROJECT p ON s.Sno = p.Jno JOIN PART pa ON pa.Pno = p.Pno

GROUP BY s.Pno HAVING COUNT() = 2 ORDER BY COUNT() DESC

**QUESTION 2/HW3**

a/ SELECT Name

FROM STUDENT

WHERE Major='CS '

b/ SELECT CourseName

FROM COURSE, SECTION

WHERE COURSE.CourseNumber=SECTION.CourseNumber AND Instructor='King' AND (Year='2007' OR Year='2008')

c/ SELECT CourseNumber, Semester, Year, Student\_number, COUNT(\*)

FROM SECTION, GRADE\_REPORT

WHERE Instructor='King' AND SECTION.SectionIdentifier=GRADE\_REPORT.SectionIdentifier

GROUP BY CourseNumber, Semester, Year, Student\_number

d/ SELECT Name, CourseName, C.CourseNumber, CreditHours, Semester, Year, Grade

FROM STUDENT ST, COURSE C, SECTION S, GRADE\_REPORT G

WHERE Class=4 AND Major='CS' AND ST.StudentNumber=G.StudentNumber AND G.SectionIdentifier=S.SectionIdentifier AND S.CourseNumber=C.CourseNumber

e/ SELECT Name, Major

FROM STUDENT

WHERE NOT EXISTS

(

SELECT \*

FROM GRADE\_REPORT

WHERE StudentNumber= STUDENT.StudentNumber AND NOT(Grade='A')

)

f/ SELECT Name, Major

FROM STUDENT

WHERE NOT EXISTS

(

SELECT \*

FROM GRADE\_REPORT

WHERE StudentNumber= STUDENT.StudentNumber AND Grade='A'

)

**QUESTION 3/HW3**

a/ CREATE VIEW manger\_info AS

SELECT Dname, Fname, Lname, Salary

FROM DEPARTMENT, EMPLOYEE

WHERE Mgr\_ssn = Ssn

b/ CREATE VIEW research\_employee\_info(Lname,Fname,Supervisor,Salary)AS

SELECT E.Lname,E.Fname,S.Lname,E.Salary

FROM EMPLOYEE E,EMPLOYEE S, DEPARTMENT D

WHERE Dname='Research' AND D.Dnumber=E.Dno AND E.Superssn=S.Ssn

c/ CREATE VIEW project\_info

SELECT Pname, Dname,

(

SELECT COUNT(Ssn)

FROM WORKS\_ON W1

WHERE W1.Pno=P.Pno

)

AS Num\_Employees,

(

SELECT SUM(Hours)

FROM WORKS\_ON W2

WHERE W2.Pno=P.Pno

)

AS Total\_Hours

FROM Project P, Department D

WHERE P.Dno=D.Dno

d/ CREATE VIEW project\_info AS

SELECT Pname, Dname,

(

SELECT COUNT(\*)

FROM WORKS\_ON W1

WHERE W1.Pno = P1.Pnumber

)

AS Num\_Employee,

(

SELECT SUM(W2.Hours)

FROM WORKS\_ON W2

WHERE W2.Pno = P1.Pnumber

GROUP BY Pno

)

AS Total\_Hours

FROM PROJECT P1, DEPARTMENT D1

WHERE P1.Dnum = D1.Dnumber