**Assignment – 3**

**Question 1.**

1. EMPALL 🡨 EMPLOYEE JOIN Ssn=Essn WORKS\_ON Pno=Pnumber PROJECT

EMP\_X 🡨 SELECT Dno=5 AND Pname=”ProductX” AND Hours>10 (EMPALL)

Ans🡨 PROJECT Fname ,Lname(EMP\_X)

1. PROJECT Fname,Lname (EMPLOYEE) JOIN Ssn=Essn AND Fname=Dependent\_name (Dependent)
2. WONG 🡨 PROJECT Ssn ( SELECTLname=”Wong” AND Fname=”Franklin” (EMPLOYEE))

Ans🡨 PROJECT Fname,Lname(EMPLOYEE) JOIN Superssn=Ssn (WONG)

1. Phours (Pno,Total\_hours) 🡨 Pno F sum Hours(WORKS\_ON)

Ans🡨 PROJECT Pname,Total\_hours(Phours JOIN Pno=Pnumber PROJECT)

1. PROJ\_E(Pno,Ssn) 🡨 PROJECT Pno,Essn (WORKS\_ON)

ALL\_P(PNO) 🡨 PROJECT Pnumber (PROJECT)

EMPS\_ALL 🡨 PROJ\_E / ALL\_P

RESULT 🡨 PROJECT Lname,Fname (EMPLOYEE \* EMPS\_ALL)

1. EMP\_ALL 🡨 PROJECT Ssn (EMPLOYEE)

EMPS\_WORK(SSN) 🡨 PROJECT Essn (WORKS\_ON)

NO\_WORK\_EMPS 🡨 (EMP\_ALL) –( EMPS\_WORK)

Ans 🡨 PROJECT LNAME,FNAME (EMPLOYEE \* NO\_WORK\_EMPS)

1. DEPT\_AVG (DNUMBER,AVG) 🡨 DNO f AVG SALARY (EMPLOYEE)

Ans 🡨 PROJECT Dnumber,AVG( DEPT\_AVG \* DEPARTMENT )

1. F Avg Salary (SELECT Sex=’female’(EMPLOYEE))
2. ALLMANAGER(SSN)🡨 PROJECT Mgr\_ssn (DEPARTMENT)

EMPS\_AND\_DEPENDENTS(SSN) 🡨 PROJECT Essn (DEPENDENT)

RESULT\_EMPS 🡨 ALLMANAGER - EMPS\_AND\_DEPENDENTS

RESULT 🡨 PROJECT Lname,Fname (EMPLOYEE \* RESULT\_EMPS)

QUESTION 2:

1. ) Insert < 'Robert', 'F', 'Scott', '943775543', '21-JUN-42', '2365 Newcastle Rd, Bellaire, TX', M, 58000, '888665555', 1 > into EMPLOYEE.

No violations

1. Insert < 'ProductA', 4, 'Bellaire', 2 > into PROJECT

Violates referential integrity because there is no tuple with Dnumber = 2 in the DEPARTMENT table. We may enforce integrity constraint by:

1. Rejecting the insertion
2. Changing the Dnumber to a value that exists in DEPARTMENT table
3. Inserting a new tuple in DEPARTMENT table with Dnumber=2
4. Insert < 'Production', 4, '943775543', '01-OCT-88' > into DEPARTMENT

Violates:

**key constraint**- As there already exists a tuple in the DEPARTMENT table with Dnumber = 4

Enforcement: i) Reject the insertion

ii) Changing the value of Dumber to a value that does not violates key constraint

Also, violates

**referential integrity**- AS there is no tuple in the EMPLOYEE table with Ssn ‘94377543’

Enforcement:

1. Reject the insertion
2. Changing the value of Mgr\_ssn to a value that exists in the EMPLOYEE table
3. Inserting a new tuple in the EMPLOYEE table with Ssn ‘943775543’
4. Insert < '677678989', null, '40.0' > into WORKS\_ON.

Voilates: Entitiy integrity and Referential integrity

Entity integrity : As Pno is the primary key and it cannot be NULL

Enforcement: i) Reject the insertion

ii) changing the value of Pno in the insertion to a value that exists in the Project table

Referential Integrity: Voilates referential integrity because Essn ‘677678989’ doesnot exist in the EMPLOYEE relation

Enforcement: i) Reject the insertion

ii) changing the value of Essn to a existing SSN value in the EMPLOYEE relation

ii) inserting a new EMPLOYEE tuple with SSN=’677678989’

1. No violations
2. No violations
3. Delete the EMPLOYEE tuple with SSN= '987654321'

Violates referential integrity because this tuple is being referenced in other tables such as DEPARTMENT, DEPENDENT and EMPLOYEE

Enforcement: i) Rejecting the relation

ii) Deleting all the tuples in all the tables that reference to this tuple with Ssn ‘987654321’

1. Delete the PROJECT tuple with PNAME= 'ProductX'

Violates referential integrity because there are tuples in Work\_On table that reference this tuple in the Project table

Enforcement: i) reject the deletion

ii) deleting the tuples in Work\_On as well that refer to this tuple that is being deleted in the PROJECT table

1. No violations
2. Modify the SUPERSSN attribute of the EMPLOYEE tuple with SSN= '999887777' to '943775543'

Voilates referential integrity because the new value of SUPERSSN=’943775543’ doesnot refer to any tuple in the EMPLOYEE table with Ssn = ‘94377543’

1. No violations

**QUESTION 3)**

1. ) A view that has the department name, manager name, and manager salary for every department.

CREATE VIEW INFO ( DepartmentName,Mgr\_Last\_Name.Mgr\_First\_Name,MGR\_Salary)

AS SELECT d.Dname,e.Lname,e.Fname,e.Salary

FROM DEPARTMENT AS d,EMPLOYEE AS e

WHERE d.Mgr\_ssn=e.Ssn;

1. A view that has the employee name, supervisor name, employee salary for each employee who works in the 'Research' department.

CREATE VIEW EMPINFO ( Emp\_Last\_Name.Emp\_First\_Name,Supr\_Name,Emp\_Salary)

AS SELECT e.Lname,e.Fname,s.Lname,s.Salary

FROM EMPLOYEE e,EMPLOYEE s, Department d

WHERE d.Dname=”Research” AND d.Dnumber=e.Dno And e.Super\_ssn=s.Ssn;

1. A view that has project name, controlling department name, number of employees, and total hours worked per week on the project for each project.

CREATE VIEW ProjInfo ( ProjName,Dname,Emps\_num,Total\_hours)

AS Select p.Pname,d.Dname,Count(\*),Sum(w.Hours)

FROM PROJECT p,DEPARTMENT d,WORKS\_ON w

WHERE p.Pnumber=w.Pno AND p.Dnum=d.Dnumber

GROUP BY p.Pname,d.Dname;

1. A view that has project name, controlling department name, number of employees, and total hours worked per week on the project for each project with more than one employee working on it.

CREATE VIEW ProjInfo ( ProjName,Dname,Emps\_num,Total\_hours)

AS Select p.Pname,d.Dname,Count(\*),Sum(w.Hours)

FROM PROJECT p,DEPARTMENT d,WORKS\_ON w

WHERE p.Pnumber=w.Pno AND p.Dnum=d.Dnumber

GROUP BY p.Pname,d.Dname

HAVING COUNT(\*) >1;