\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

DBMS ASSIGNMENT | SEMESTER 4

EXERCISE 9 : DATABASE DESIGN USING NORMAL FORM

SHARAN GIRI | 18 5001 141 | CSE ‘C’

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

**PART A :**

8. To Prove Dependency Preservation Property .

Sol:

The given relation R (empid , name , address , bdate , sex , salary , dno , dname , mgr\_id , pno , pname ,pdno ,hrs).

Before we prove the DEPENDENCY PRESERVATION PROPERTY ,(for simplicity) let us consider/code the attributes in terms of alphabets as in

ATTRIBUTE REPRESENTATION

Empid A

Name B

Address C

Bdate D

Sex E

Salary F

Dno G

Dname H

Mgr\_id I

Pno J

Pnmae K

Pdno L

Hrs M

Now the given relation would translate to R(A,B,C,D,E,F,G,H,I,J,K,L,M) with the FD’s

F = { A -> BCDEFG , G -> HI , J -> KL , AJ->M}

The given relation R is decomposed into 4 relations:

1. <employee > Table

RELATION: R1 (A,B,C,D,E,F,G)

FD’s : F1 = { A->BCDEFG } ----- (1)

1. <department> Table

RELATION: R2(G , H, I)

FD’s : F2 ={ G -> H , G-> I} ------(2)

1. <project> Table

RELATION : R3(J , K , L)

FD ‘s : F3 = { J -> K , J -> L} ------(3)

1. <works\_on> Table

RELATION : R4( A , J , M)

FD’s : F4 = { AJ -> M} ------(4)

Let F’ be the FD of the Union of relations R1 , R2 , R3 and R4

Hence , F ‘ = F1 ∪ F2 ∪ F3 ∪ F4 ={ A -> BCDEFG , G -> HI , J -> KL , AJ -> M} ( From 1,2,3,4)

so F’ = F.

* F’⁺ = F⁺ .

Thus , the decomposition is dependency preserving decomposition.