**DBMS ASSIGNMENT 9**

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Q 9A).

FINDING PRIMARY KEY

Given relation is

COMPANY ( empid, name, address, bdate, sex, salary, dno, dname, mgr\_id, pno, pname, pdno, hrs)

Assuming the entities

As A,B,C,……M -> 13 Attributes

Then the given FD’s

fd1: empid -> name, address, bdate, sex, salary, dno

fd2: dno -> dname, mgr\_id

fd3: pno -> pname, pdno

fd4: empid, pno -> hrs

transforms to :

fd1 : { A->B,C,D,E,F,G }

fd2 : {G -> H,I}

fd3 : { J -> K,L}

fd4 : { A,J -> M}

considering ( A,G,J ) as the key attribute

and now trying to reduce it.

Removing G

A,J ->{A,J}

Using fd1

A,J -> {A,B,C,D,E,F,G,J}

Using fd2

A,J -> {A,B,C,D,E,F,G,H,I,J}

Using fd3

A,J -> { A,B,C,D,E,F,G,H,I,J,K,L }

Using fd4

A,J -> { A,B,C,D,E,F,G,H,I,J,K,L,M}

So A,J determines all the attributes of Relation COMPANY

Further Reducing A,J we wouldn’t get all the attributes of COMPANY

So A, J is the Primary Key attribute of COMPANY

**So empid, pno is the Primary Key attribute of COMPANY**

And

COMPANY is referenced by

The four fd’s fd1 -> 4 : { A -> B,C,D,E,F,G : G -> H,I : J -> K,L : A,J -> M }

The decomposed tables are EMPLOYEE, DEPARTMENT, PROJECT and WORKS\_ON

1. EMPLOYEE(A,B,C,D,E,F,G) Represented by fd1
2. DEPARTMENT(G , H, I) Represented by fd2
3. PROJECT(J , K , L) Represented by fd3
4. WORKS\_ON( A , J , M) Represented by fd4

Let F be the union of fd1, fd2, fd3, fd4

F = { fd1 U fd2 U fd3 U fd4 }

Then F ={ A -> B,C,D,E,F,G : G -> H,I : J -> K,L : A,J -> M }

Now the FD set (G) of Relation COMPANY is same as F

So F = G

Therefore F⁺ = G⁺

**Thus, the decomposition is dependency preserving decomposition.**

Q 9B.

1

N

M

1

N

N

1

N

1

N

**INSTRUCTOR**

Instructs

Offers

Allocated To

Completed In

Assigned To

**SECTION**

**COURSE**

**DEPARTMENT**

**STUDENT**

**STUDENT**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Fname | Lname | **Sid** | Addr | Phone | Major | Dob | Sex | Degree | Minor | DCode |

**DEPARTMENT**

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| --- | --- | --- | --- |
| DName | **DCode** | Dphone | College |

**COURSE**

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| --- | --- | --- | --- | --- | --- |
| CName | **CCode** | Clevel | Credits | CDesc | DCode |

**SECTION**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SecID** | SecNo | Sem | Year | Croom | Ccode | Iid |

**INSTRUCTOR**

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| **Iid** | IName | IPhone |

**COMPLETED IN**

|  |  |  |
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| **Sid** | **SecId** | Grade |