

## 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

$A, J \rightarrow \{A, B, C, D, E, F, G, H, I, J, K, L, M\}$

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  $fd1 \rightarrow 4 : \{A \rightarrow B, C, D, E, F, G : G \rightarrow H, I : J \rightarrow K, L : A, J \rightarrow M\}$

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

$F = \{fd1 \cup fd2 \cup fd3 \cup fd4\}$

Then  $F = \{A \rightarrow B, C, D, E, F, G : G \rightarrow H, I : J \rightarrow K, L : A, J \rightarrow M\}$

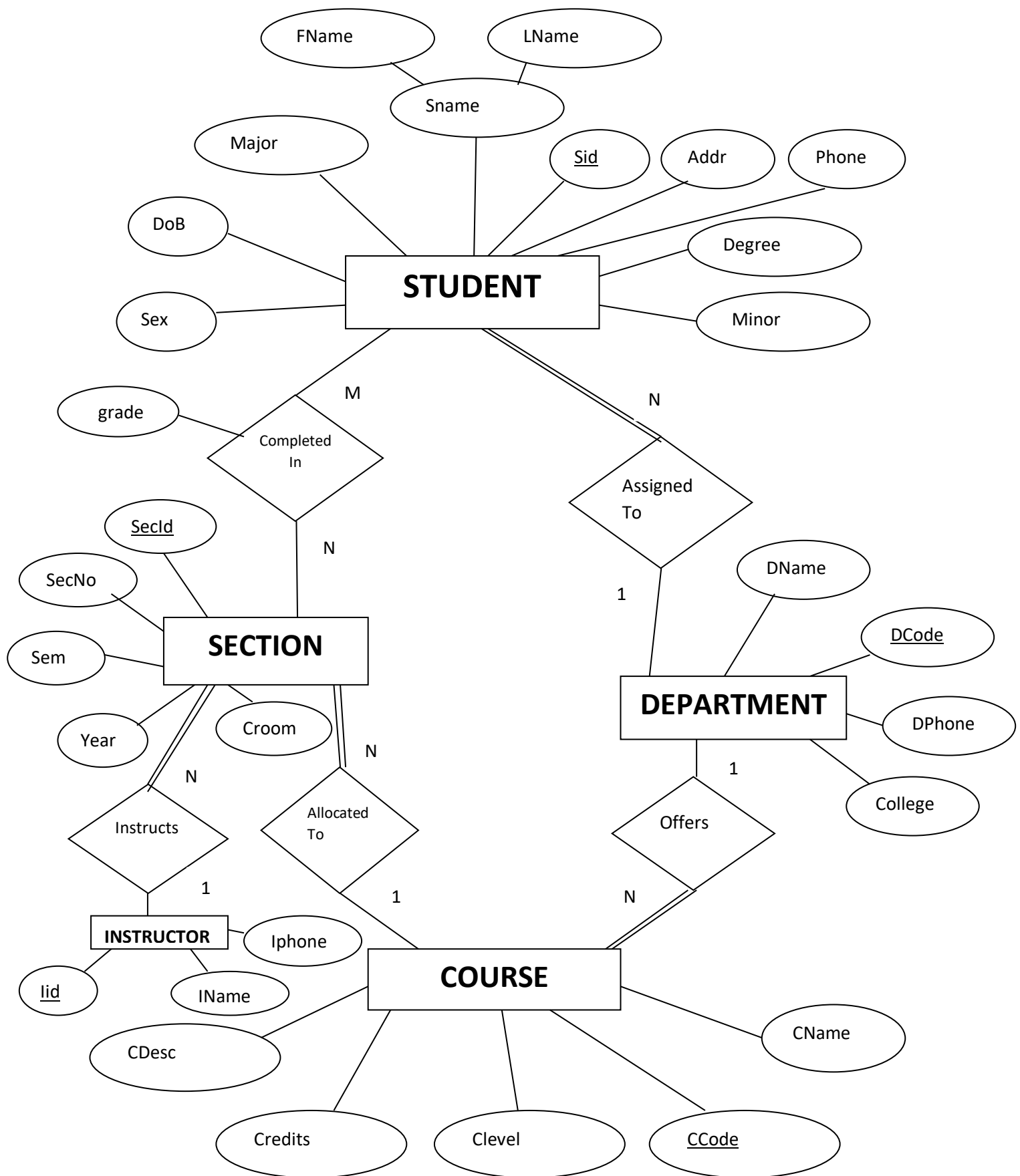
Now the FD set (G) of Relation COMPANY is same as F

So  $F = G$

Therefore  $F^+ = G^+$

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

Q 9B.



## STUDENT

Fname	Lname	<u>Sid</u>	Addr	Phone	Major	Dob	Sex	Degree	Minor	DCode
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## DEPARTMENT

DName	<u>DCode</u>	Dphone	College
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## COURSE

CName	<u>CCode</u>	Clevel	Credits	CDesc	DCode
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## SECTION

<u>SecID</u>	SecNo	Sem	Year	Croom	Ccode	lid
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## INSTRUCTOR

<u>lid</u>	IName	IPhone
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## COMPLETED IN

<u>Sid</u>	<u>SecId</u>	Grade
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