SNS COLLEGE OF TECHNOLOGY,COIMBATORE-35

(AN AUTONOMOUS INSTITUTION)

DEPARTMENTOFCOMPUTERSCIENCEANDENGINEERING

23CST201-DATABASE MANAGEMENT SYSTEMS

UNIT-III

DatabaseDesign

Topic:MinimalCovers

Aminimalcoverisasimplifiedandreduced versionof thegivensetof functional dependencies.
Sinceitis areduced version,itisalsocalled as **Irreducibleset**. It is also called as **Canonical Cover**.

StepstoFindMinimalCover

1) Splittheright-handattributesofallFDs.
Example
A->XY=>A->X,A->Y

2) RemoveallredundantFDs.
Example
{A->B,B->C,A->C}
HereA->Cis redundantsinceitcan alreadybeachievedusingthe Transitivity Property.

3) FindtheExtraneousattributeandremoveit.
Example
AB->C,eitherAorBornonecanbe extraneous.
IfAclosure contains BthenBis extraneousanditcanberemoved.
IfBclosurecontainsAthenAisextraneousanditcanberemoved.

Example 1
Minimize{A->C,AC->D,E->H,E->AD}

Step1:{A->C,AC->D,E->H,E->A,E->D}

Step2:{A->C,AC->D,E->H,E->A}
HereRedundantFD:{E->D}

Step3:{AC->D}
{A}+= {A,C}
ThereforeCisextraneousandisremoved.
{A->D}

MinimalCover={A->C,A->D,E->H,E->A}

Example 2
Minimize{AB->C,D->E,AB->E,E->C}

Step1:{AB->C,D->E,AB->E,E->C}

Step2:{D->E,AB->E,E->C}
HereRedundantFD={AB->C}

Step3:{AB->E}
{A}+= {A}
{B}+={B}
Thereisnoextraneousattribute.

Therefore,Minimalcover={D->E,AB->E,E->C}