SNS COLLEGE OF TECHNOLOGY,COIMBATORE-35

(AN AUTONOMOUS INSTITUTION)

DEPARTMENTOFCOMPUTERSCIENCEANDENGINEERING

23CST201-DATABASE MANAGEMENT SYSTEMS

UNIT-III

DatabaseDesign

Topic:ClosureSetofFD's

ClosureOfFunctionalDependency:

- The Closure Of Functional Dependency means the complete set of all possibleattributesthatcanbefunctionallyderivedfromgivenfunctional dependency using the inference rules known as Armstrong's Rules.
- If"F"isa functionaldependencythenclosureoffunctionaldependencycan be denoted using "$\{F\}^+$".
- Therearethreestepstocalculateclosureoffunctionaldependency.These are:

Step-1 :AddtheattributeswhicharepresentonLeft HandSide intheoriginal functional dependency.

Step-2 :Now,addtheattributespresentontheRight HandSideofthe functional dependency.

Step-3 : With the help of attributes present on Right Hand Side, check the other attributesthatcanbederived fromtheothergivenfunctionaldependencies.Repeat this process until all the possible attributes which can be derived are added in the closure.

ClosureOfFunctionalDependency:Examples

Example-1:Considerthetablestudent_detailshaving(Roll_No,Name,Marks, Location) as the attributes and having two functional dependencies.

FD1 : Roll_NoName, Marks

FD2 : Name Marks,Location

Now,Wewillcalculatetheclosureofalltheattributespresentintherelationusing the three steps mentioned below.

Step-1:AddattributespresentontheLHSofthefirstfunctionaldependency to the closure.

Roll_no}$^{+}$= {Roll_No}

Step-2 :AddattributespresentontheRHSoftheoriginalfunctionaldependencyto the closure.

{Roll_no}$^{+}$={Roll_No,Marks

Step-3 : Add the other possible attributes which can be derived using attributes present on the RHS of the closure. So Roll_No attribute cannot functionally determineanyattributebutNameattributecandetermineotherattributessuchas Marks and Locationusing2nd FunctionalDependency(Name [iconname="long-arrow-right" class="" unprefixed_class=""] Marks, Location).

Therefore,completeclosureofRoll_Nowillbe:

{Roll_no}$^{+}$={Roll_No,Marks,Name,Location}