SNS COLLEGE OF TECHNOLOGY,COIMBATORE-35

(AN AUTONOMOUS INSTITUTION)

DEPARTMENTOFCOMPUTERSCIENCEANDENGINEERING

23CST201-DATABASE MANAGEMENT SYSTEMS

UNIT-III

DatabaseDesign

Topic:Dependencies

Dependencies:

Dependencies inDBMSis arelationbetweentwoormoreattributes. Relationshipbetweenattributesofanytablesthataredependenteachother.

Types:

- FunctionalDependency
- Fully-FunctionalDependency
- TransitiveDependency
- MultivaluedDependency
- PartialDependency

FunctionalDependency:

If the information stored in a table can uniquely determine another information in the same table, then it is called Functional Dependency. Consider it as an association between two attributes of the same relation.

IfPfunctionallydeterminesQ,then

P->Q

<Employee>

EmpID	EmpName	EmpAge
E01	Amit	28

E02	Rohit	31

Intheabovetable, **EmpName** isfunctionallydependenton**EmpID** because **EmpName** cantakeonlyonevalueforthegivenvalue of **EmpID:**

EmpID->EmpName

Fully-functionallyDependency

An attribute is fully functional dependent on another attribute, if it is Functionally Dependent on that attribute and not on any of its proper subset.

For example, an attribute Q is fully functional dependent on another attribute P, if it is Functionally Dependent on P and not on any of the proper subset of P.

Letusseeanexample−

<ProjectCost>

ProjectID	**ProjectCost**
001	1000
002	5000

<EmployeeProject>

EmpID	**ProjectID**	**Days**(spent ontheproject)
E099	001	320
E056	002	190

Theaboverelationsstates:

EmpID,ProjectID,ProjectCost->Days

However,itisnotfullyfunctionaldependent.

Whereasthesubset**{EmpID,ProjectID}** caneasilydeterminethe **{Days}**spent on the project by the employee.

Thissummarizesandgivesour fullyfunctionaldependency –

{EmpID,ProjectID}->(Days)

TransitiveDependency

When an indirect relationship causes functional dependency it is called Transitive Dependency.

IfP->QandQ ->Ristrue,thenP->Risatransitive dependency.

MultivaluedDependency

When existence of one or more rows in a table implies one or more other rows in the same table, then the Multi-valued dependencies occur.

Ifatable hasattributesP,QandR,thenQ andRare multi-valued factsofP. It is

represented by double arrow −

->->

P->->QQ->->R

Intheabovecase, MultivaluedDependencyexistsonlyifQandRare independent attributes.

PartialDependency

PartialDependencyoccurs whena nonprime attribute is functionallydependent on part of a candidate key.

The2ndNormalForm(2NF)eliminatesthePartialDependency.Letusseean example −

<StudentProject>

StudentID	ProjectNo	StudentName	ProjectName
S01	199	Katie	GeoLocation
S02	120	Ollie	Cluster Exploration

Intheabovetable,wehavepartialdependency;letusseehow− The

prime key attributes are **StudentID** and **ProjectNo.**

As stated, the non-prime attributes i.e. **StudentName**and**ProjectName**should be functionally dependent on part of a candidate key, to be Partial Dependent.

The **StudentName** canbedetermined by **StudentID** that makestherelation Partial Dependent.

The**ProjectName** canbe determined by**ProjectID**, whichthat the relationPartial Dependent.