31-03-2020 Computer Science 2nd Year

Subject - DBMS

Functional Dependency :-

The functional Dependency is a relationship that exists between two attribute. It typically exists between the Primary Key and non key attribute with a table.

$$X \rightarrow Y$$

the left side of FD is known as a determinant the right side of the production is known as a dependent

For example

Assume we have an employee table with attribute: EMP_Id, EMP_NAME, EMP_Address

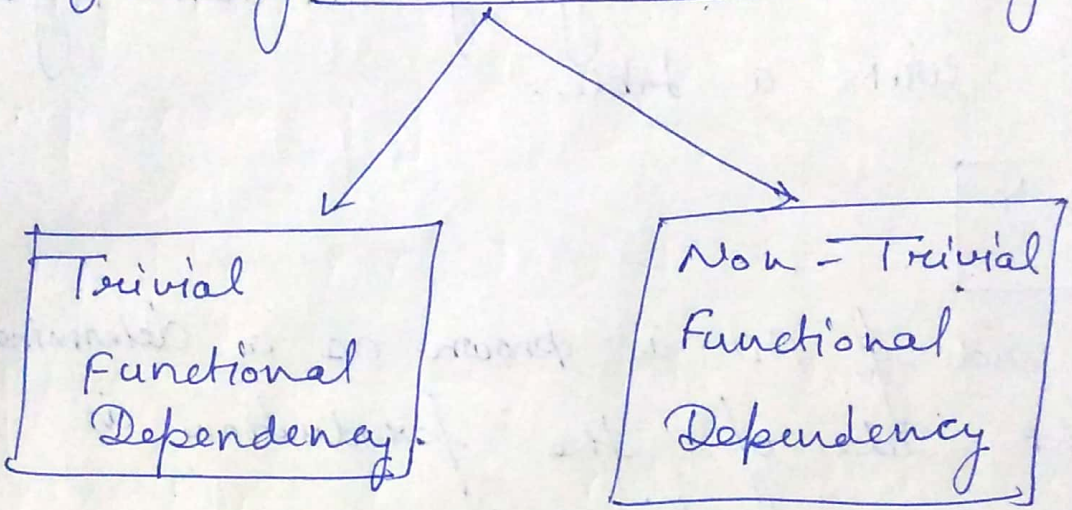
Here EMP-Id attribute can uniquely Identify the EMP_NAME attribute of employee table because if we know the EMP_Id we can tell that employee name associated ~~that~~ with it.

Functional Dependency can be written as

EMP_Id → EMP_NAME

we can say that EMP_Name is functionally dependent on EMP_Id.

Types of Functional Dependency -



Trivial functional Dependency

⇒ A → B has trivial functional dependency if B is a subset of A.

⇒ The following dependencies are also trivial like ~~A → B~~, A → A, B → B

Example :-

Consider a table with two columns Employee_Id and Employee_name

{Employee_Id, Employee_name} → Employee_Id is a trivial functional dependency. as Employee_Id is a subset of {Employee_Id, Employee_name}

also,

Employee_Id → Employee Id and Employee Name → Employee_name are trivial dependencies too.

2 Non trivial functional dependency

⇒ A → B has a non trivial functional dependency if B is not a subset of A

⇒ when A Intersection B is NULL, then A → B is called as complete non trivial

For example :

An employee table with three attributes :- emp_Id, emp_name, emp_address.

The following functional dependencies are non trivial :

emp_Id → emp_name (emp_name is not a subset of emp_Id)

emp_Id → emp_address (emp_address is not a subset of emp-Id)

⇒ (on the other hand the following dependency are trivial)

{emp-Id, emp-name} → emp-name

[emp-name is a subset of {emp-Id, emp-name}.]

Completely non trivial FD

If a FD X → Y hold true where X Intersection Y is null then this dependency is said to be completely non trivial function dependency.

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