Dependencies

Dependencies in RDBMS is a relation between two or more attributes.

Types of Dependency

There are mainly Two Types of Dependency in DBMS.

1. Functional Dependency.
2. Full functional Dependency. [Detail Discuss in Normalization topic]

functional Dependency

There are four types of functional Dependency.

→ Partial Dependency.

→ Transitive Dependency.

→ Multivalued Dependency.

→ Join Dependency

(Trival or Non-Trival FD)

fully functional Dependency

An attribute is fully functional depende on another attribute, If it is functionally dependent on that attribute and not on any of its proper subset.

Functional Dependency

- The functional dependency is a relationship that exists between two attributes.

- It exists between the primary key and non-key attribute within a table.

$$X \rightarrow Y$$

determinant ↑   ↑ dependent
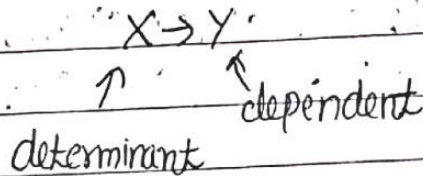
- A functional dependency is denoted by an arrow "→".

functional Dependency

$$X \rightarrow Y$$

Y - functionally dependent on A.
X → determinant
Y → dependent

Example

We have a Department table with two attributes →

DeptId and Deptname

The DeptId is our primary key it uniquely identifies the DeptName attribute.

So if you want to know the department name, then at first you need to have the DeptId.

DeptID	DeptName
01	CompSci
02	MBA
03	Maths

→ There is functional dependency between DeptID and DeptName can be determined as DeptId is functionally dependent on DeptName.

$$DeptId \rightarrow DeptName$$

Types of functional Dependency

Trivial FD

Non-Trivial FD

Partial FD

Transitive FD

Join FD

Multivalued FD
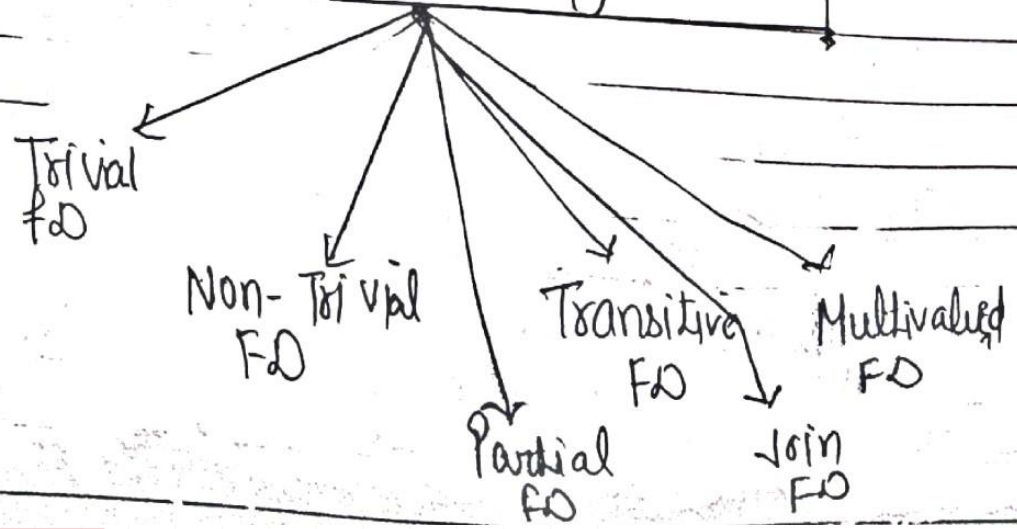
(i) Trivial functional Dependency

In Trival functional Dependency, a dependent is always a subset of the determinant.

i.e. IF $X \to Y$ and Y is the subset of X. then it is called -trivial functional dependency.

(ii) Non-Trival functional Dependency

It occurs when Y is not a subset of X.

Ex:- DeptId → DeptName

The above is a non-trival functional dependency since deptname is not a subset of DeptId.

(iii) Transitive Dependency

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

for example
If $X \to Y$ and $Y \to Z$ is true, then $X \to Z$ is a transitive dependency.

(D) Multivalued Dependency

When there is one or more rows in a table implies one or more other rows in the same table, then the Multi-valued dependency occur.

It is represented by double arrows →→

Example

$$P \twoheadrightarrow Q$$
$$Q \twoheadrightarrow R$$

(5) Partial Dependency

When a Non-Prime attribute of a table is dependent on only a part of the candidate key, then such dependency is defined as Partial dependency.

$$X \rightarrow Y$$

X is a subset of candidate key.
Y is Non Prime attribute.

(6) Join Dependency

It is just a like multivalued dependency.
It is discuss in 5NF.