Outline

Functional Dependency and it's types

Functional Dependency

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

$$X \rightarrow Y$$

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

Types of Functional Dependency

- Partial Functional Dependencies
- Transitive Functional Dependencies
- Trivial and Non Trivial Functional Dependencies
- Join Dependencies
- Multivalued Dependencies

Partial Functional Dependency

Partial Dependency occurs when a non-prime attribute is functionally dependent on part of a candidate key.

Transitive FD's

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

If P -> Q and Q -> R is true, then P-> R is a transitive dependency.

Trivial FD's

If a functional dependency (FD) X → Y holds, where Y is a subset of X, then it is called a trivial FD. Trivial FDs always hold.

Non trivial FD's

If an FD $X \rightarrow Y$ holds, where Y is not a subset of X, then it is called a non-trivial FD.

Join FD's

If a table can be recreated by joining multiple tables and each of this table have a subset of the attributes of the table, then the table is in Join Dependency.

Multivalued FD's

- 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.
- If a table has attributes P, Q and R, then Q and R are multi-valued facts of P.
- It is represented by double arrow: ->->
- Multivalued Dependency exists only if Q and R are independent attributes.