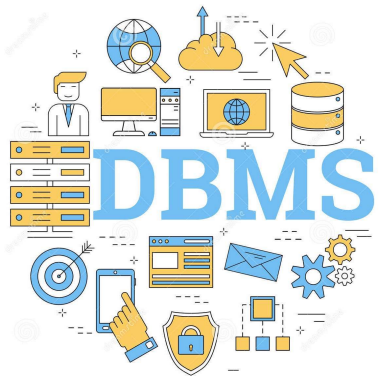
Unit III – Database Design

Dependencies and Normal forms - Functional Dependencies, Armstrong's axioms for FD's, closure of a set of FD's, **minimal covers - Non- loss decomposition** -First, Second, Third Normal Forms, Dependency Preservation-Boyce/Codd Normal Form- Multivalued Dependencies and Fourth Normal Form- Join Dependencies and Fifth Normal Form



Minimal covers or Canonical Cover of Functional Dependencies

- Canonical cover is called minimal cover which is called the minimum set of FDs.

F= Functional Dependencies
F' = Canonical Cover

If F' don't have

- Extraneous Attribute / Redundant Attribute
- Redundant FD's

Minimal covers or Canonical Cover of Functional Dependencies

Steps

1. Splitting Rule – so that in every FD's right hand side has single Attribute

2. Remove Extraneous Attribute / Redundant Attribute

3. Remove Redundant FD's

Example 1

- Consider an example {AB →C, C → AB, B→C, ABC→AC ,A→C, AC→B }to find canonical cover of F.

1. Splitting Rule – so that in every FD's right hand side has single Attribute

F = {AB →C, C → A ,C → B, B→C, ABC→A, ABC→C ,A→C, AC→B }

Trivial Dependency

2. Remove Extraneous Attribute / Redundant Attribute

F = {B →C, C → A ,C → B , B→C, A→C, A→B }

3. Remove Redundant FD's

F = {C → A , B→C, A→B }

$C^{+} \rightarrow CB$

$C^{+} \rightarrow CAB$

$B^{+} \rightarrow B$

$A^{+} \rightarrow ACB$

$A^{+} \rightarrow A$

Home Work

Consider an following example to find canonical cover of F.

1. { A -> BC, B -> C, A -> B, AB -> C }
2. {A → C, AB → C, C → DI, CD → I, EC → AB, EI → C}


Thank You!