LET'S START WITH DBMS :)

Equivalence of Functional Dependencies

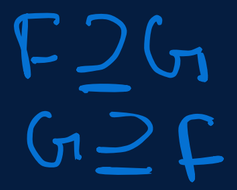
Equivalence of Functional Dependencies

Functional Dependency: A functional dependency $X \rightarrow Y$ holds on a relation R if, for any two tuples t1 and t2 in R, whenever $t1[X]=t2[X]$, then $t1[Y]=t2[Y]$

Two sets of functional dependencies, F and G, are equivalent if the following conditions hold:

1. F implies G : Every functional dependency in G can be derived from F.
2. G implies F: Every functional dependency in F can be derived from G.

If both conditions are true, then we say that F and G are equivalent.



LET'S START WITH DBMS :)

Equivalence of Functional Dependencies

How to find if two FD are equivalent

Step 1: Compute the Closure of both the sets
Step 2: Ensure that every functional dependency in set1 is in set2 closure
Step 3: Ensure that every functional dependency in set2 is in set1 closure
Step 4: If both subset checks pass, then set1 and set2 are equivalent.

LET'S START WITH DBMS :)

Step 1: Compute the Closure of both the sets
Step 2: Ensure that every functional dependency in set1 is in set2 closure
Step 3: Ensure that every functional dependency in set2 is in set1 closure
Step 4: If both subset checks pass, then set1 and set2 are equivalent.

Equivalence of Functional Dependencies

Consider two sets of functional dependencies: F={A→B,B→C} , G={A→C,A→B}
Check if F and G are equivalent

F={A→B,B→C}
Closure of F, attributes -> A,B,C
A+={A,B,C}
B+={B,C}
C+={C}

G={A→C,A→B}
Closure of G, attributes -> A,B,C
A+={A,C,B}
B+={B}
C+={C}

F and G are not equivalent because B→C is not implied by G