

LET'S START WITH DBMS :).

Normalisation and its types

Third Normal Form (3NF)

1. It is in Second Normal Form (2NF).
2. It has no transitive dependency, which means no non-prime attribute is transitively dependent on a candidate key.

Transitive dependent: no non-prime attribute should be dependent on another non-prime attribute

For any functional dependency $X \rightarrow Y$, one of the following conditions must be true to be in 3rd normal form.

X is a superkey or candidate key (LHS)

Y is a prime attribute (i.e., part of some candidate key). (RHS)

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Normalisation and its types

Third Normal Form (3NF)

Consider there is a relation $R(A,B,C,D)$ with FD : $AB \rightarrow C$, $C \rightarrow D$. Find if this is in 3NF?

1. Identify the Candidate Key

$A^+ = \{A\}$

$B^+ = \{B\}$

$C^+ = \{C, D\}$

$D^+ = \{D\}$

$AB^+ = \{A, B, C, D\}$

So, AB is a candidate key here.

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Normalisation and its types

Third Normal Form (3NF)

2. Check for transitive dependency

→ no non-prime attribute should be dependent on another non-prime attribute

FD: $AB \rightarrow C, C \rightarrow D$

CK : AB

prime attribute : {A,B} non-prime : {C,D}

a. $AB \rightarrow C$ (no transitive as AB is a C.K)

b. $C \rightarrow D$ (transitive as C is not a superkey or candidate key or D is a prime attribute)

Not in 3NF.