

## 3NF Example

### Condition:

- 1) It is in 2NF
- 2) No transitive dependencies for Non prime attributes.  
Example : Non prime attributes  $\rightarrow$  Non prime attributes

A relation is in 3NF iff for each of its non trivial FD atleast one of the following condition holds:

- 1) LHS is Super key
- 2) RHS is prime attribute

### Example 1:

$R(A,B,C,D)$  and  $FD = \{ A \rightarrow B, B \rightarrow C, C \rightarrow D \}$

Is above relation in 3NF?

#### Answer:

CK is A.

More Candidate key? No

Prime attribute : A

Non Prime : B, C, D

It is in 2NF

For 3NF,

$B \rightarrow C, C \rightarrow D$  are Transitive Dependencies.

Hence R is not in 3NF.

### Example 2:

$R(A,B,C,D,E,F)$  and  $FD = \{ AB \rightarrow CDEF, BD \rightarrow F \}$

Is above relation in 3NF?

#### Answer:

AB is a CK.

More Candidate key? No

Prime attribute : A,B

Non Prime : C, D, E, F

2NF ??

(Hint: Proper subset of AB are A and B)

3NF ??

### Example 3:

$R(A,B,C,D,E)$  and  $FD = \{ A \rightarrow B, B \rightarrow C, C \rightarrow D, D \rightarrow A \}$

Is above relation in 3NF?