Lecture-16
SSK

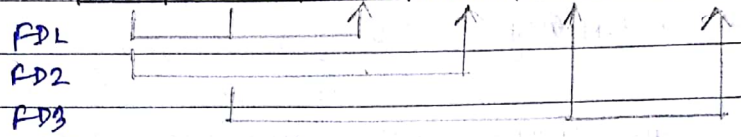
classmate
Date 26/02/18
Page

Second normal form (2NF)

EMP-PROJ

SSN	Pnumber	Hours	Ename	Pname	Plocation

FD1
FD2
FD3



⇒ Full functional dependency

$X \rightarrow Y$ → X determines Y

- Now if we remove an attribute A from X, then if $X - [A]$ no longer determines Y, then it is called full functional dependency.

⇒ Partial functional dependency

If $X \rightarrow Y$
and $X - [A]$ also determines Y.

- A relation schema R is said to be in 2NF if every non prime attribute of R is fully functionally dependent on the primary key of R.

In the earlier example,

(SSN, Pnumber) → Hours
composite primary key

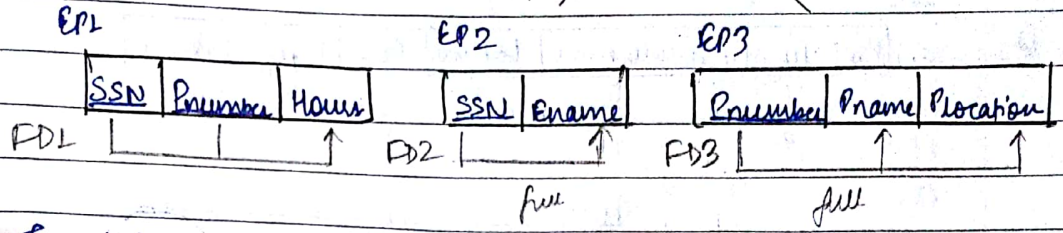
SSN → Ename
(SSN, Pnumber) → Ename] → Partial functional dependency

- If even a single partial functional dependency exists, it can't be said to be in 2NF form. However, it can be brought to 2NF form by breaking it down further. (decomposing)

* All the ER diagrams we draw, they mostly are 3NF.

No composite key so checking for 2NF is invalid :)

2NF normalization



- For being in 2NF it must be in 1NF and every non-primary attribute must be fully functionally dependent on the primary key.

Third normal form (3NF)

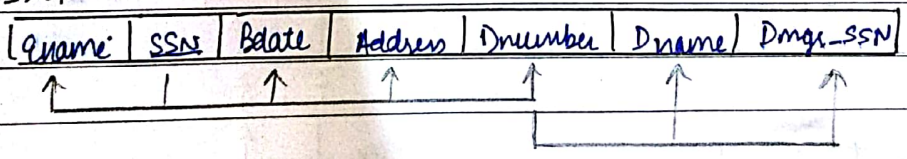
~~* functional~~ ,

⇒ Transitive functional dependency

A functional dependency $X \rightarrow Y$ is said to be transitive if there exists an attribute Z such that $X \rightarrow Z$ and $Z \rightarrow Y$

- A relational schema R is said to be in 3NF if -
  i) it is in 2NF
  ii) Every non prime attribute of R is non-transitively dependent on primary key.

EMP_DEPT



if it were primary, no problem would occur but it's dependent on primary key

3NF normalization

(SSN → Dmgr_SSN) → a non prime attribute is transitively dependent on primary key
∴ not a 3NF.