1

Its not always possible to achieve both BCNF and dependency preservation

a b c and c->b

Clearly the above schema is in 3NF, because ab->c is a superkey dependency and ,from c>b we can see that b-c=b, which is a subset of the primary key (such dependency is also allowed in 3NF).

But, the above schema is not in BCNF because c->b is neither super-key nor trivial dependency.

So we decompose above schema , keeping it lossless.

Only possible lossless decomposition is: ac and cb. (because,their intersection c is primary key for the 2nd

table).

But clearly the dependency ab->c is lost. 2

UnitID	TutorID	Topic	Room	Date
U1	Tut1	GMT	629	23.02.03
U2	Tut3	Gln	631	18.11.02
U5	Tut3	PhF	632	05.05.03
U4	Tut5	AVQ	621	04.07.03

StudentID	Grade	UnitID
St1	4.7	U1
St1	5.1	U2
St4	4.3	U1
St2	4.9	U5
St2	5.0	U4

TutorID	TutEmail
Tut1	tut1@fhbb.ch
Tut3	tut3@fhbb.ch
Tut5	tut5@fhbb.ch

Topic	Book
GMT	Deumlich
Gln	Zehnder
PhF	Dummlers
AVQ	SwissTopo

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ProjectName	Budget	TeamSize	Project_Manager
Project1	1 kk $	15	Manager1
Project2	1.5 kk $	12	Manager2

Project_Manager	Position
Manager1	CTO
Manager2	CTO2

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Group	Specialty
G1	S1
G2	S2

Specialty	Faculty
S1	F1
S2	F2

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ProjectID	Department
P1	D1
P2	D2

ProjectID	Curator	TeamSize
P1	E1	100
P2	E2	120

TeamSize	ProjectGroupsNumber
100	5
120	6