T2

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

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

Topic	Book
GMT	Deumlich
Gin	Zehnder
Phf	Dummlers
AVG	SwissTopo

UnitID	StudentID
U1	St1
U2	St1
U3	St4
U4	St2
U5	St2

T1

It is not always possible to achieve both BCNF and dependency preservation

dept_advisor(s_ID, i_ID, department_name)
i_ID → dept_name
s_ID, dept_name → i_ID
dept_advisor is not in BCNF, because i_ID is not a superkey
Any decomposition of dept_advisor will not include all the attributes in s_ID, dept_name → i_ID

Example:

(s_ID, i_ID)

(i_ID, dept_name)

The functional dependency s_ID, dept_name → i_ID can only be checked by computing the join of the decomposed relations

Advantages of BCNF over 3NF

We can use null values to represent some of the possible meaningful relationships among data items. There is no problem of repetition of information.

T3

ProjectName	Projectmanager
Project1	Manager1
Project2	Manager2

ProjectName	Budget	Teamsize	Projectmanager
Project1	1kk$	15	Manager1
Project2	1.5kk$	12	Manager2

Projectmanager	Position
Manager1	CTO
Manager2	CTO2

T4

Group	Speciality
G1	S1
G2	S2

Speciality	Faculty
S1	F1
S2	F2

T5

projectID → TeamSize

teamSize → ProjectGroupNumber

ProjectID	Department
P1	D1
P2	D2

ProjectID	TeamSize	Curator
P1	100	E1
P2	120	E2

TeamSize	ProjectGroupsNumber
100	5
120	6

T6

- 1) Dependency preserving decomposition.
  This permits the validity of an update to be tested without the need to compute a join of relations in the decomposition.

- 2) Lossless join decomposition
  By this way we can maintain an accurate relations in our database.

- 3) Minimization of information repetition
  The smallest possible amount of space is used for storing the information.

Desirable type: **Lossless Decomposition**
By lossless decomposition it becomes feasible to reconstruct the relation R from decomposed tables R1

and R2 by using Joins.
Undesirable type: **Lossy Decomposition** We cannot reconstruct the original relation