Task 1.

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

Advantages to 3NF over BCNF. It is always possible to obtain a 3NF design without sacrificing losslessnessor dependency preservation.

Disadvantages to 3NF. We may have to use null values to represent some of the possible meaningful relationships among data items. There is the problem of repetition of information

Task 2.

UnitID	StudentID	Tutor ID	Grade
U1	St1	Tut1	4.7
U2	St1	Tut3	5.1
U1	St4	Tut1	4.3
U5	St2	Tut3	4.9
U4	St2	Tut5	5.0

UnitID	Date	Room	Topic	Book
U1	23.02.03	629	GMT	Deumlich
U2	18.11.02	631	GIn	Zehnder
U5	05.05.03	632	PhF	Dümmlers
U4	04.07.03	621	AVQ	SwissTop

Tutor ID	TutEmail
Tut1	tut1@fhbb.ch
Tut3	tut1@fhbb.ch
Tut1	tut1@fhbb.ch
Tut3	tut3@fhbb.ch
Tut5	tut5@fhbb.ch

Task 3.

ProjectName	ProjectManager	Position
Project1	Manager1	CTO
Project2	Manager2	CTO2

ProjectName	Budget	TeamSize
Project1	1 kk $	15
Project2	1.5 kk $	12

Task 4.

Group	Speciality
g1	s1
g2	s2

Speciality	Faculty
s1	f1
s2	f2

Task 5.

ProjectID	Curator	TeamSize
p1	e1	100
p2	e2	120

TeamSize	ProjectGroupsNumber
100	5
120	6

Department	Curator
d1	e1
d2	e2

Task 6.

The three design goals for relational databases:

1. BCNF
2. Losslessness
3. Dependency preservation

Desirable decompositions:

Lossless join, dependency preserving decompositions

Undesirable decompositions:

A lossy decomposition