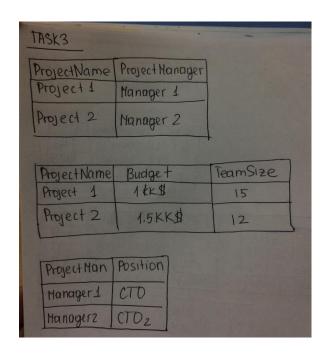Bissenova Anara / 20BD / Lab5

Task1.

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

- Consider a schema: dept_advisor(s_ID, i_ID, department_name)
- With function dependencies: i_ID → dept_name; s_ID, dept_name → i_ID
- dept_advisor is not in BCNF • i_ID is not a superkey.
- Any decomposition of dept_advisor will not include all the attributes in s_ID, dept_name → i_ID
- Thus, the composition is NOT be dependency preserving

Task2 and Task3.

Task2

UnitID	StudentID	Topic	Grade
U1	St1	GMT	4.7
U2	St1	GLn	5.1
U1	St4	GMT	4.3
U5	St2	PhF	4.9
U21	St2	AVQ	5.0

UnitID	topic	Date	Room
U1	GMT	23/02/03	629
U2	GLn	15/11/02	631
U4	PhF	05/05/03	632
U5	AVQ	04/07/03	621

TutorID	Tem
tut1	t1@
tut3	t3@
tut5	t5@

TOPIC	Book	TutorID
GMT	Reumlich	Tut1
GLn	Zehnder	Tut3
Phf	Dummlers	Tut3
AVQ	SwissTopo	Tut5

TASK3

ProjectName	Project Manager
Project 1	Manager 1
Project 2	Manager 2

ProjectName	Budget	TeamSize
Project 1	1 kk$	15
Project 2	1.5 KK$	12

ProjectMan	Position
Manager1	CTO
Manager2	CTO_2

Task4 and Task5.

TASK4

Group	Speciality
g1	s1
g2	S2

Speciality	faculty
S1	f1
S2	f2

Task5

Project ID	Department	Curator	TeamSize
P1	d1	e1	100
P2	d2	e2	120

TeamSize	Project Groups Num
100	5
120	6

Task6.

The three design goals are:

1. lossless-join decompositions

2. dependency preserving decompositions

3. BCNF

They are desirable so we can maintain an accurate database, check correctness of updates quickly, and use the smallest amount of space possible.

Example of undesirable type is lossy decomposition, because we cannot obtain initial relation.