Shafigullin Tamirlan

Lab 5

Task1

Will the conversion to BCNF be dependency preserving in any case? Proof your statement and give reasoning for choosing BCNF design.

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

Consider a schema:

Requests(student_ID, officeRegistWorker_ID, university_name)

With finction dependencies:

officeRegistWorker_ID -> university_name

student_ID, university_name -> officeRegistWorker_ID

Requests is not in BCNF

officeRegistWorker_ID is not a superkey.

Any decomposition of Requests will not include all the attributes in

student_ID, university_name -> officeRegistWorker_ID

Thus, the composition is NOT be dependency preserving.

Task2

Tutor ID	StudentID	Grade
Tut1	St1	4.7
Tut1	St4	4.3
Tut3	St1	5.1
Tut3	St2	4.9
Tut5	St2	5.0

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

Topic	Book	TutorID
GMT	Deumlich	Tut1
Gln	Zehnder	Tut3
AVQ	SwissTopo	Tut5
Phf	Dümmlers	Tut3

UnitID	Date	Topic	Room
U1	23.02.03	GMT	629
U2	18.11.02	Gln	631
U4	04.07.03	AVQ	621
U5	05.05.03	Phf	632

Task3

ProjectName	ProjectManager	Position
Project1	Manager1	CTO
Project2	Manager2	CTO2

ProjectName	Budget
Project1	1 kk $
Project2	1.5 kk $

ProjectManager	TeamSize
Manager1	15
Manager2	12

Task4

Speciality	Group
S1	G1
S2	G2

Faculty	Speciality
F1	S1
F2	S2

Task5

ProjectID	Department	Curator	TeamSize
P1	D1	E1	100
P2	D2	E2	120

TeamSize	ProjectGroupsNumber
100	5
120	6

Task6

The three design goals are **lossless-join decompositions, dependency preserving decompositions, and minimization of repetition of information.**

Undesirable properties: **update anomaly, insertion anomaly, delete anomaly.**

Desirable properties: **minimizing redundancies, minimizing anomalies.**