

Database Design, CSCI 340, Spring 2016
Normalization to BCNF exercises, March 23

1. Decompose the following relation into BCNF if it is not already in BCNF.

Wellmeadows Hospital Patient Medication Form							
Patient Number: <u>P10034</u>							
Full Name: <u>Robert MacDonald</u>				Ward Number: <u>Ward 11</u>			
Bed Number: <u>84</u>				Ward Name: <u>Orthopaedic</u>			
Drug Number	Name	Description	Dosage	Method of Admin	Units per Day	Start Date	Finish Date
10223	Morphine	Pain Killer	10mg/ml	Oral	50	24/03/08	24/04/09
10334	Tetracycline	Antibiotic	0.5mg/ml	IV	10	24/03/08	17/04/08
10223	Morphine	Pain Killer	10mg/ml	Oral	10	25/04/09	02/05/10

Figure 14.18 The *Wellmeadows Hospital* Patient Medication Form.

2. Consider Exercise 14.15:

staffNo	dentistName	patNo	patName	appointment date	time	surgeryNo
S1011	Tony Smith	P100	Gillian White	12-Sep-08	10.00	S15
S1011	Tony Smith	P105	Jill Bell	12-Sep-08	12.00	S15
S1024	Helen Pearson	P108	Ian MacKay	12-Sep-08	10.00	S10
S1024	Helen Pearson	P108	Ian MacKay	14-Sep-08	14.00	S10
S1032	Robin Plevin	P105	Jill Bell	14-Sep-08	16.30	S15
S1032	Robin Plevin	P110	John Walker	15-Sep-08	18.00	S13

Figure 14.19 Table displaying sample dentist/patient appointment data.

a. Give examples of insert, update and delete anomalies for the relation above.

b. Find all the FDs in the following (state any assumptions that you use)

c. Normalize the table to BCNF.

3. The following relation has the FDs listed below.

Choir

sId	abbrev	pID	fName	lName	title_p	composer	years	dateTime	title_s
1	Leben	1	Billie	Meyer	Austria My Home	Schubert	1797-1828	2013-12-22 19:00:00	Lebenslust
3	Kyrie	1	Rich	Myer	Austria My Home	Beethoven	1770-1827	2013-12-22 19:00:00	Kyrie
3	Maria	1	Rich	Myer	Austria My Home	Schubert	1797-1828	2013-12-22 19:00:00	Ave Maria
3	Kyrie	2	Rich	Myer	Spring in the Air	Beethoven	1770-1827	2013-05-12 19:00:00	Kyrie
4	Leben	2	Jenn	Swartz	Spring in the Air	Schubert	1797-1828	2013-05-12 19:00:00	Lebenslust
5	Maria	2	Rich	Vandick	Spring in the Air	Schubert	1797-1828	2013-05-12 19:00:00	Ave Maria
2	Maria	3	Butch	Lee	Snowy Christmas	Schubert	1797-1828	2014-12-24 19:00:00	Ave Maria
4	Leben	3	Jenn	Swartz	Snowy Christmas	Schubert	1797-1828	2014-12-24 19:00:00	Lebenslust

8 rows in set (0.00 sec)

$pID \rightarrow title_p, dateTime$
 $sId \rightarrow fName, lName$
 $abbrev \rightarrow song, composer, years, title_s$
 $composer \rightarrow years$
 $pId, abbrev \rightarrow sId$ and everything else

Key: pId, abbrev

Normalize this relation to BCNF, if it is not already in BCNF.