Matt Pineau November 3, 2014

Database Management Professor Labouseur

Lab 7

1. Considering he's already signed my consulting agreement, I would probably let out a sigh, shake my head, and say, "I've got some work to do."

2. First Normal Form:

PackID	TagNum	InstallDate	SoftwareCost
AC01	32808	09-13-1995	754.95
DB32	32808	12-03-1995	380.00
DB32	37691	06-15-1995	380.00
DB33	57772	05-27-1995	412.77
WP08	32808	01-12-1996	185.00
WP08	37691	06-15-1995	227.50
WP08	57222	05-27-1995	170.24
WP09	59836	10-30-1995	35.00
WP09	77740	05-27-1995	35.00

3. There are no ideal options for a primary key, but given this table, it would probably be a composite of PackID and TagNum, assuming that

the same software cannot be installed twice onto a computer. (If this is a possibility, it would probably need to include the date, but then we would probably have to keep track of it as a datetime…needless to say it would be a mess to leave the data as-is).

4.

PackID	TagNum	InstallDate	SoftwareCost	PackName	CompMod
AC01	32808	09-13-1995	754.95	Spotify	Apple
DB32	32808	12-03-1995	380.00	Lucid Chart	Apple
DB32	37691	06-15-1995	380.00	Lucid Chart	HP
DB33	57772	05-27-1995	412.77	Microsoft Visio	Dell
WP08	32808	01-12-1996	185.00	Sublime Text 2	Apple
WP08	37691	06-15-1995	227.50	Sublime Text 2	HP
WP08	57222	05-27-1995	170.24	Sublime Text 2	Dell
WP09	59836	10-30-1995	35.00	Sublime Text 3	Apple
WP09	77740	05-27-1995	35.00	Sublime Text 3	Dell

5.

PackID → PackName

TagNum → CompMod

6. This table is not in third normal form because it is not in second normal form. If we decided earlier that the primary key is a composition of PackID and TagNum, then PackName is only dependent on part of the primary key (PackID), therefore the table is not in second normal form. The same issue is present in the functional dependency of CompMod on TagNum and not PackID.

7.

Software (Primary Key = PackID)

PackID	PackName
AC01	Spotify
DB32	Lucid Chart
DB33	Microsoft Visio
WP08	Sublime Text 2
WP09	Sublime Text 3

Installations (Primary Key = {PackID , TagNum})

PackID	TagNum	InstallDate	SoftwareCost
AC01	32808	09-13-1995	754.95
DB32	32808	12-03-1995	380.00
DB32	37691	06-15-1995	380.00
DB33	57772	05-27-1995	412.77
WB08	32808	01-12-1996	185.00
WB08	37691	06-15-1995	227.50
WB08	57222	05-27-1995	170.24
WB09	59836	10-30-1995	35.00
WB09	77740	05-27-1995	35.00

Computers (Primary Key = TagNum)

TagNum	CompMod
32808	Apple
37691	HP
57772	Dell
59836	Apple
77740	Dell

8.

Software Table:

PackID → PackName

Installations Table:

{PackID, TagNum} → SoftwareCost

Note Here I noticed that the cost of the software differed for some installations of the same software and wasn't dependent solely on the PackID. This led me to believe that the variable price was either due to a combination of the PackID with the TagNum (installing Microsoft software on a mac is probably more expensive than installing it on a computer running windows), or it had to do with the installation date and whether there was a sale on the software or a drop in price over time. I designed this table on the basis of it being a combination of PackID and TagNum, but I recognize that this could be incorrect.

Computers Table:

TagNum → CompMod

9. These new tables are in third normal form, because in each table, every functional dependency is on that table's primary key, and nothing else. This differs from before, because we have eliminated the case where PackName was dependent on only PackID, and not the entire primary key (which was the composition of

PackID and TagID). This was achieved breaking the data up into three separate tables, each with its own primary key. Now each functional dependency is on the entire primary key of each table (second normal form) and there are no functional dependencies on fields from a table that are not the primary key of that table (third normal form).

10.