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Normalization Homework # 1

Part One: Kramerica CEO Miles Meservy has put together a spreadsheet of all the data he has so far, which he personally collected.

1. As he shows you the spreadsheet, having just signed your consulting agreement, he asks what you think of it. How you you reply?

I would say that the spreadsheet needs to be redone because more than one TagNumber is linked to a PackageID. This will make it more difficult to find the data that you are looking for as fast as possible and could also lead to inconsistent data.

2. Put his data in 1NF and display it. Show me the table; not SQL

PackageID	TagNumber	InstallDate	SoftwareCostUSD
AC01	32808	9/13/2005	754.95
DB32	32808	12/3/2005	380
DB32	37691	6/15/2005	380
DB33	57772	5/27/2005	412.77
WP08	32808	1/12/2006	185
WP08	37691	6/15/2005	227.5
WP08	57222	5/27/2005	170.24
WP09	59836	10/30/2005	35
WP09	77740	5/27/2005	35

3. What is the primary key?

The primary key is the combination of PackageID and TagNumber

Part 2: Add two columns of new data: one for software package name (e.g., Zork, Portal, etc.) and one for computermodel (e.g., HP, Apple, etc.). Be sure that your new data is consistent with the original data. Do not add any additional columns.

1. Display the new table

PackageID	TagNumber	InstallDate	SoftwareCostUSD	SoftwarePackageName	ComputerModel
AC01	32808	9/13/2005	754.95	Zork	HP
DB32	32808	12/3/2005	380	Portal	HP
DB32	37691	6/15/2005	380	Portal	Apple
DB33	57772	5/27/2005	412.77	Adobe	Dell
WP08	32808	1/12/2006	185	TEG	HP
WP08	37691	6/15/2005	227.5	TEG	Apple
WP08	57222	5/27/2005	170.24	TEG	Microsoft
WP09	59836	10/30/2005	35	LOL	Apple
WP09	77740	5/27/2005	35	LOL	HP

2. Identify and document all the functional dependencies

Tag number functionally determines ComputerModel

PackageID functionally determines SoftwarePackageName

PackageID and TagNumber and InstallDate functionally determines SoftwareCostUSD

3. Explain why this new table is not in third normal form.

This table is not in third normal form because in order for a relation to be in third normal form it also must be in second normal form and first normal form. The relation is not in second normal form because in second normal form all non key attributes are dependent on ALL parts of the primary key. The attribute SoftwarePackageName is only dependent on the packageID when it needs to be dependent on BOTH PackageID and Tag number.

Part 3: Decompose your 1NF table into a set of tables that are in at least third normal form. BCNF would be better.) Remember that it's wrong to add artificial keys to associative entities

1. Identify all primary keys (determinants) for all tables

PackageID + TagNumber for table **Installs**

PackageID for table **Software Packages**

TagNumber for table **Computers**

2. Identify all functional dependencies for all tables.

Installs

PackageID and TagNumber and InstallDate Functionally Determine SoftwareCostUSD

Software Packages

PackageID Functionally Determines SoftwarePackageName

Computers

TagNumber Functionally Determines ComputerModel

3. Explain why the new tables are in third normal form.

The new tables are in third normal form because they meet both first and second normal form. The new tables are also in third normal form because all non key attributes are not dependent on any other non key attributes.

4. Draw a beautiful E/R diagram.

