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Database Management Homework

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**Part One:**

1. My reply to the spreadsheet currently in place for KramERICA Enterprises is that it is a very good start but I think that it can be improved upon. The data in the table can be organized in much more clear manner if normalized. The purpose for this is so that anyone can understand exactly what is going on in the table without question.

PackageID	TagNumber	InstallDate	SoftwareCostUSD
AC01	32808	9/13/2005	754.95
DB32	32808	12/3/2005	380.00
DB32	37691	6/15/2005	380.00
DB33	57772	5/27/2005	412.77
WP08	32808	1/12/2006	185.00
WP08	37691	6/15/2005	227.50
WP08	57222	5/27/2005	170.24
WP09	59836	10/30/2005	35.00
WP09	77740	5/27/2005	35.00

2. The Primary Key is PackageID and TagNumber.

**Part Two:**

- 1.

PackageID	TagNumber	InstallDate	SoftwareCostUSD	SoftwarePackageName	ComputerModel
AC01	32808	9/13/2005	754.95	Zork	HP
DB32	32808	12/3/2005	380.00	Portal	HP
DB32	37691	6/15/2005	380.00	Portal	Apple
DB33	57772	5/27/2005	412.77	Age of Mythology	Asus
WP08	32808	1/12/2006	185.00	Notepad++	HP
WP08	37691	6/15/2005	227.50	Notepad++	Apple
WP08	57222	5/27/2005	170.24	Notepad++	Asus
WP09	59836	10/30/2005	35.00	Microsoft Outlook	Lenovo
WP09	77740	5/27/2005	35.00	Microsoft Outlook	Gateway

2. PackageID → SoftwarePackageName (SoftwarePackageName is dependent on PackageID)

TagNumber → ComputerModel (ComputerModel is dependent on TagNumber)

PackageID, TagNumber → InstallDate, SoftwareCostUSD

(InstallDate, SoftwareCostUSD are dependent on PackageID, TagNumber)

3. This table is not in Third normal form because there are partial and multiple dependencies. There are multiple primary keys in this table (PackageID, TagNumber). Some of the attributes are dependent on only one of these keys, for example SoftwarePackageName is dependent on PackageID but not TagNumber and ComputerModel is dependent on TagNumber but not PackageID. In order for this table to be in Third normal form it is necessary to split this one table into three separate ones with the proper dependencies.

### Part Three:

1.

Table 1 (Software)

PackageID	SoftwarePackageName
AC01	Zork
DB32	Portal
DB32	Portal
DB33	Age of Mythology
WP08	Notepad++
WP08	Notepad++
WP08	Notepad++
WP09	Microsoft Outlook
WP09	Microsoft Outlook

Table 2 (Computers)

TagNumber	ComputerModel
32808	HP
32808	HP
37691	Apple
57772	Asus
32808	HP
37691	Apple
57222	Asus

59836	Lenovo
77740	Gateway

Table 3 (Installation)

PackageID	TagNumber	InstallDate	SoftwareCostUSD
AC01	32808	9/13/2005	754.95
DB32	32808	12/3/2005	380.00
DB32	37691	6/15/2005	380.00
DB33	57772	5/27/2005	412.77
WP08	32808	1/12/2006	185.00
WP08	37691	6/15/2005	227.50
WP08	57222	5/27/2005	170.24
WP09	59836	10/30/2005	35.00
WP09	77740	5/27/2005	35.00

The Primary key for the first table is PackageID. The Primary key for the second table TagNumber. The Primary key for the third table is PackageID and TagNumber as a composite key.

2. PackageID → SoftwarePackageName (SoftwarePackageName is dependent on PackageID)

TagNumber → ComputerModel (ComputerModel is dependent on TagNumber)

PackageID, TagNumber → InstallDate, SoftwareCostUSD

(InstallDate, SoftwareCostUSD are dependent on PackageID, TagNumber)

3. The new tables are in Third normal form because the attributes in the tables are only dependent on the specified primary keys. There is also no partial or multiple key dependency. SoftwarePackageName is dependent on PackageID, ComputerModel is dependent on TagNumber, and InstallDate/SoftwareCostUSD are both dependent on PackageID and TagNumber.

4.

