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Normalization 1

Part 1

1. The first thing I would say to the CEO of Tycho is there definitely can be improvements made for his spreadsheet using a great database. Also, I would recommend better names for the columns. For example, for the dates column, other countries read the dates a bit differently than the United States so that might cause confusion for others. Also there is no valid primary key. The last thing I would mention is that I have noticed there are some duplicates which cannot be good.

2.

PackageID	TagNumber	InstallDate	SoftwareCostUSD
AC01	32808	09-13-2005	754.95
DB32	32808	12-03-2005	380.00
DB32	37691	06-15-2005	380.00
DB33	57772	05-27-2005	412.77
WP08	32808	01-12-2006	185.00
WP08	37691	06-15-2005	227.50
WP08	57222	05-27-2005	170.24
WP09	59836	10-30-2005	35.00
WP09	77740	05-27-2005	35.00

3. The primary key would be a composite key with PackageID and TagNumber combine. This will make it unique since there are duplicates in both columns.

Part 2

4.

PackageID	TagNumber	InstallDate	SoftwareCostUSD	SPackageName	CompModel
AC01	32808	09-13-2005	754.95	Rosetta Stone	IBM
DB32	32808	12-03-2005	380.00	Microsoft Word	IBM
DB32	37691	06-15-2005	380.00	Microsoft Word	Apple
DB33	57772	05-27-2005	412.77	Movie Editor	Dell
WP08	32808	01-12-2006	185.00	Visual Studio	Asus
WP08	37691	06-15-2005	227.50	Visual Studio	Apple
WP08	57222	05-27-2005	170.24	Visual Studio	HP
WP09	59836	10-30-2005	35.00	Packet Tracer	Cypertron PC
WP09	77740	05-27-2005	35.00	Packet Tracer	Lenovo

5. CompModel depends on TagNumber and SPackageName depends on PackageID. Also, SoftwareCostUSD depends on PackageID and TagNumber together as a composite key.

6. Third normal form states that there should be no multi key dependencies and the table should go through second normal form first. Since the table has multiple dependencies, the entity does not pass for third normal form.

Part 3

7. Computer Models (TagNumber is the primary key)

TagNumber	CompModel
32808	IBM
32808	IBM
37691	Apple
57772	Dell
32808	Asus
37691	Apple
57222	HP
59836	Cypertron PC
77740	Lenovo

Software Packages (PackageID is the primary key)

PackageID	SPackageName	InstallDate
AC01	Rosetta Stone	09-13-2005
DB32	Microsoft Word	12-03-2005
DB32	Microsoft Word	06-15-2005
DB33	Movie Editor	05-27-2005
WP08	Visual Studio	01-12-2006
WP08	Visual Studio	06-15-2005
WP08	Visual Studio	05-27-2005
WP09	Packet Tracer	10-30-2005
WP09	Packet Tracer	05-27-2005

Software Prices (TagNumber and PackageID is the composite key)

PackageID	TagNumber	SoftwareCostUSD
AC01	32808	754.95
DB32	32808	380.00
DB32	37691	380.00
DB33	57772	412.77
WP08	32808	185.00
WP08	37691	227.50
WP08	57222	170.24

WP09	59836	35.00
WP09	77740	35.00

8. TagNumber → CompModel

PackageID → SPackageName, InstallDate

PackageID, TagNumber → SoftwareCostUSD

9. The new tables are in third normal form because there are no multiple key dependencies. Also, all the columns just depends on the primary key.

10.

