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Part One:

1. As he shows you the spreadsheet, having just signed your consulting agreement, he asks what you think of it. How do you reply?
 - a. The spreadsheet you provided me has some very useful data and is very organized. To make your spreadsheet even better, i'm going to put it through many normalization forms to make sure there is no redundancy in data.
2. Put his data in 1NF and display it. (Show me the table; no SQL.)
3. What is the primary key?

a.

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	577772	05-27-2005	412.77
WP08	32808	01-12-2006	185.00
WP08	32808	06-15-2005	227.50
WP08	32808	05-27-2005	170.24
WP09	59836	10-30-2005	35.00
WP09	77740	05-27-2005	35.00

3. What is the primary key?
 - a. The primary key is “PackageID” a

Part Two:

1.

PackageID	TagNumber	InstallDate	SoftwareCo stUSD	package_na me	computer_ model
AC01	32808	09-13-2005	754.95	CCleaner	Dell
DB32	32808	12-03-2005	380.00	Chrome	Dell
DB32	37691	06-15-2005	380.00	Chrome	HP

DB33	577772	05-27-2005	412.77	uTorrent	windows
WP08	32808	01-12-2006	185.00	Skype	Dell
WP08	37691	06-15-2005	227.50	Skype	HP
WP08	57222	05-27-2005	170.24	Skype	Apple
WP09	59836	10-30-2005	35.00	Teamviewer	Acer
WP09	77740	05-27-2005	35.00	Teamviewer	Lenovo

2. Identify and document all functional dependencies

- PackageID -> Package_name
- TagNumber -> Computer_model
- (PackageID, Tagnumber) -> InstallDate
- (PackageID, Tagnumber) -> SoftwareCostUSD

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

1. This new table is not in third normal form because if changes were made, it would not be updated everywhere else. For example, if the PackageID was to be changed, then the package name may not get updated for the rest of the data which will lead to inconsistency. Another reason this is not in third normal form is because there are non-prime attributes in the table that are dependent on other keys. In other words, a separate table could be made to fix this issue with a primary key.

Part Three

Computers

TagNumber	computer_model
32808	Dell
37691	HP
577772	Windows
57222	Apple
59836	Acer
77740	Lenovo

Packages

PackageID	package_name
AC01	CCleaner
DB32	Chrome
DB33	uTorrent
WP08	Skype
WP09	Teamviewer

Install

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

All primary keys are

- Packages - PackageID
- Computers - TagNumber
- Installations - (PackageID, TagNumber)

Functional Dependencies

- PackageID -> package_name

- TagNumber -> computer_model
- (PackageID, TagNumber) -> InstallDate
- (PackageID, TagNumber) -> Software cost usd

Explain why the new tables in in third form.

- The tables are in third normal form because we have used foreign keys relation which removes any chances of there being inconsistent data. If something is changed somewhere, it is applied everywhere else. In other words, the update, deletion, and insertion anomalies have been reduced. Also, beside from a primary key, an attribute don't depend on any other attribute eliminating non-prime attributes.

Draw a E/R Diagram

