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Part 1

1. The first thing see when I look at this spreadsheet is that the cost of the software packages seems to fluctuate quite frequently for some packages, while others remain relatively stable in price. This leads me to believe that at some point in the future, both the current cost of the software package and the cost of the software package at the time of installation should be stored in this database. Another thing I notice is that the combination of packageID and TagNumber seems to be the best option for the primary key, as no single column can be used to uniquely identify any row, and utilizing the InstallDate or SoftwareCostUSD columns wouldn't make sense from a business point of view. Using these two columns as the primary key, however, would mean that no computer could have the same software package installed on it more than once. While this may already be the case, I would need to ask to make sure.

2.

	packageid character(4)	tagnumber character(5)	installdate date	softwarecostusd money
1	AC01	32808	2005-09-13	$754.95
2	DB32	32808	2005-12-03	$380.00
3	DB32	37691	2005-06-15	$380.00
4	DB33	57772	2005-05-27	$412.77
5	WP08	32808	2006-01-12	$185.00
6	WP08	37691	2005-06-15	$227.50
7	WP08	57222	2005-05-27	$170.24
8	WP09	59836	2005-10-30	$35.00
9	WP09	77740	2005-05-27	$35.00

3. The primary key is the composite key containing PackageID and TagNumber

Part 2

4.

	packageid character(4)	packagename text	tagnumber character(5)	computermodel text	installdate date	softwarecostusd money
1	AC01	Zork	32808	Apple	2005-09-13	$754.95
2	DB32	Portal	32808	Apple	2005-12-03	$380.00
3	DB32	Portal	37691	IBM	2005-06-15	$380.00
4	DB33	Portal 2	57772	Microsoft	2005-05-27	$412.77
5	WP08	League of Legends	32808	Apple	2006-01-12	$185.00
6	WP08	League of Legends	37691	IBM	2005-06-15	$227.50
7	WP08	League of Legends	57222	Dell	2005-05-27	$170.24
8	WP09	Dota 2	59836	Acer	2005-10-30	$35.00
9	WP09	Dota 2	77740	Lenovo	2005-05-27	$35.00

5. PackageID -> PackageName
    TagNumber -> ComputerModel
    PackageID, TagNumber -> InstallDate, SoftwareCostUSD
6. This table is not in third normal form, because it has not yet reached second normal form. Second normal form is where there are no partial key dependencies, meaning there are no non-key elements dependent on only a part of the primary key. This table contains partial key dependencies, as PackageName is determined only by the PackageID, and not by the TagNumber. Also, the ComputerModel is determined only by the TagNumber, not by the PackageID.

Part 3

7. For the SoftwarePackages table, the primary key is PackageID, for the Computers table the primary key is TagNumber, and for the Installations table the primary key is a composite key of the foreign keys PackageID and TagNumber.
8. For the SoftwarePackages table the functional dependencies are PackageID -> PackageName
   For the Computers table the functional dependencies are TagNumber -> ComputerModel
   For the Installations table the functional dependencies are PackageID, TagNumber -> InstallDate, SoftwareCostUSD
9. These new tables are in third normal form because they satisfy all of the previous normal form rules, as well as not having any multi-key dependencies. All three tables satisfy 1st normal form, as all of the fields are atomic. Seeing as both the SoftwarePackages table and Computers table only contain one primary key and one non-key field, they satisfy both 2nd and 3rd normal form, as with only one key and one non-key attribute, there can be no partial key dependencies or multi-key dependencies. Finally, the installation table satisfies the 2nd normal form, as both InstallationDate and SoftwareCostUSD are dependent on both PackageID and TagNumber, and it satisfies 3rd normal form because neither InstallationDate or SoftwareCostUSD is dependent on anything other than the two primary keys, PackageID and TagNumber.

10.

SoftwarePackages

PK	PackageID	char(4)
	PackageName	text

Installations

PK	FK	PackageID	char(4)
PK	FK	TagNumber	char(4)
		InstallDate	date
		SoftwareCostUSD	money

Computers

PK	TagNumber	char(4)
	ComputerModel	text