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Lab 7

1. Although the spreadsheet makes sense, in that it doesn't technically repeat any groups, the spreadsheet can't be compiled in first normal form. There can't be more than 1 tag number in 1 box; for example when DB32 has both 32808 and 37691 listed in the same row. Fred Johnson needs to separate those into separate rows in order to fulfill the 1NF rule that the domain of each attribute is atomic and only contains one value.

2.

<b>PackageID</b>	<b>TagNumber</b>	<b>InstallDate</b>	<b>SoftwareCostUSD</b>
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	380.00
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 is the composition of both the PackageID and the TagNumber columns. This is because there is repetition of tag numbers and package ID's, so by choosing just one column, you wouldn't know exactly which row you were referring to. You need to combine them in order to make a unique key.

4.

<b>PackageID</b>	<b>TagNumber</b>	<b>InstallDate</b>	<b>SoftwareCostUSD</b>	<b>SoftName</b>	<b>CModel</b>
AC01	32808	09-13-2005	754.95	Zork	Apple
DB32	32808	12-03-2005	380.00	Portal	Apple
DB32	37691	06-15-2005	380.00	Portal	IBM
DB33	57772	05-27-2005	380.00	ESpeak	Dell
WP08	32808	01-12-2006	185.00	Apache	Apple
WP08	37691	06-15-2005	227.50	Apache	IBM
WP08	57222	05-27-2005	170.24	Apache	Dell
WP09	59836	10-30-2005	35.00	Orange	Lenovo
WP09	77740	05-27-2005	35.00	Orange	HP

5. PackageID → SoftName

TagNumber → CModel

{PackageID, TagNumber} → InstallDate, SoftwareCostUSD

{SoftName, CModel} → InstallDate, SoftwareCostUSD

6. This table is not in 3NF because there are multiple key dependencies. The InstallDate column and the SoftwareCostUSD column used to be just dependent on the PackageID/TagNumber key. Now those columns can also be dependent on the SoftName/CModel composite key as well.

7. The primary keys for this table are the composition of PackageID and TagNumber.

8. PackageID → SoftName

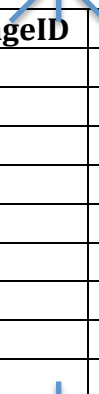
{PackageID, TagNumber} → InstallDate, SoftwareCostUSD

TagNumber → CModel


9. The new tables are in third form because they follow the rules of both 1NF and 2NF and they don't have any multiple key dependencies. The only primary key is the composition of the PackageID and the TagNumber.

10.

PackageID	SoftName
AC01	Zork
DB32	Portal
DB33	ESpeak
WP08	Apache
WP09	Orange



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
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WP08	57222	05-27-2005	170.24
WP09	59836	10-30-2005	35.00
WP09	77740	05-27-2005	35.00



TagNumber	CModel
32808	Apple
37691	IBM
57772	Dell
59836	Lenovo
77740	HP