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Database Systems

Lab 7 Normalization:

**Part One:**

1. All the needed data is there, it can just be formatted better, so I will properly format your data to make it easier to access, as well as to insure there is no duplication in the data. With doing this it will insure that there is Data Integrity.

2.

TagNum	PackID	InstallDate	SoftwareCost
32808	AC01	9/13/1995	\$754.95
32808	DB32	12/3/1995	\$380.00
37691	DB32	6/15/1995	\$380.00
57772	DB33	5/27/1995	\$412.77
32808	WP08	1/12/1996	\$185.00
37691	WP08	6/15/1995	\$227.50
57222	WP08	5/27/1995	\$170.24
59836	WP09	10/30/1995	\$35.00
77740	WP09	5/27/1995	\$35.00

3. The primary key is a compound key consisting of the TagNum and PackID.

**Part Two:**

4.

TagNum	PackID	InstallDate	SoftwareCost	SoftwarePackage	CompModel
32808	AC01	9/13/1995	\$754.95	Zork	HP
32808	DB32	12/3/1995	\$380.00	Portal	HP
37691	DB32	6/15/1995	\$380.00	Portal	Dell
57772	DB33	5/27/1995	\$412.77	Microsoft	Apple
32808	WP08	1/12/1996	\$185.00	Angular	HP
37691	WP08	6/15/1995	\$227.50	Angular	Lenovo
57222	WP08	5/27/1995	\$170.24	Angular	Razr
59836	WP09	10/30/1995	\$35.00	Bootstrap	Toshiba
77740	WP09	5/27/1995	\$35.00	Bootstrap	Sony

5.

TagNum, PackID -&gt; InstallDate

TagNum, PackID -&gt; SoftwareCost

TagNum -&gt; CompModel

PackID -&gt; SoftwarePackage

6. This table is not in third normal form because it is not in second normal form. There are parts of the data that apply to multiple parts of the data, which should be separated into multiple tables. Also SoftwarePackage does not depend on the primary compound key, so it should be placed in its own table; as well is the same for CompModel, since it depends on TagNum not the primary compound key.

**Part Three:**

TagNum	PackID	InstallDate	SoftwareCost
32808	AC01	9/13/1995	\$754.95
32808	DB32	12/3/1995	\$380.00
37691	DB32	6/15/1995	\$380.00
57772	DB33	5/27/1995	\$412.77
32808	WP08	1/12/1996	\$185.00
37691	WP08	6/15/1995	\$227.50
57222	WP08	5/27/1995	\$170.24
59836	WP09	10/30/1995	\$35.00
77740	WP09	5/27/1995	\$35.00

PackID	SoftwarePackage
AC01	Zork
DB32	Portal
DB33	Microsoft
WP08	Angular
WP09	Bootstrap

TagNum	CompModel
32808	HP
37691	Dell
57772	Apple
37691	Lenovo
57222	Razr
59836	Toshiba
77740	Sony

7. The primary keys are the compound key of TagNum and PackID for the first table.

PackID is the other primary key, as well as TagNum for the two other tables.

8.

Table 1:

TagNum, PackID -> InstallDate

TagNum, PackID -> SoftwareCost

Table 2: PackID -> SoftwarePackage

Table 3: TagNum -&gt; CompModel

9. The tables are in first normal form because they each have a primary key. They are also in second normal form because each column is fully dependent on its primary key.

The tables are also in third normal form because all columns that do not rely on the primary key are removed from the table.

10.

