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Lab 7: Normalization One
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Part One

1. The table you provided me contains valuable data and helps me better understand what needs to be accomplished when building the database. However, this table cannot be used because there is redundancy and columns have multiple entries in the same rows. Therefore, this data must be normalized in order for it to be properly used as information.
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. In this table, no column can be used to uniquely identify a row. That being said, a primary key can be found with the use of the composite key made up of TagNumber and PackageID.

Part Two

4. Table Displayed

PackageID	TagNumber	InstallDate	SoftwareCostUSD	SoftwarePackage	ComputerModel
AC01	32808	09-13-2005	754.95	FIFA	Apple
DB32	32808	12-03-2005	380.00	Zork	Apple
DB32	37691	06-15-2005	380.00	Zork	Apple
DB33	57772	05-27-2005	412.77	Chrome	Dell
WP08	32808	01-12-2006	185.00	Portal	Apple
WP08	37691	06-15-2005	227.50	Portal	Apple
WP08	57222	05-27-2005	170.24	Portal	Lenovo
WP09	59836	10-30-2005	35.00	Microsoft Office	HP
WP09	77740	05-27-2005	35.00	Microsoft Office	HP

5. Functional Dependencies Explained
   TagNumber→ CompModel
   PackageID→ SoftwarePackage
   PackageID+TagNumber→ InstallDate
   PackageID+TagNumber→ SoftwareCostUSD
6. This table is not in third normal form because in order for that to be the case, the table must be in second normal form and have no multi key dependencies. In second normal forms, there would not be any partial key dependencies; therefore there would be no dependencies that do not a primary key. In our case, neither SoftwarePackage nor CompModel are dependent on TagNumber and PackageID, they need to be in separate table in order to achieve third normal form.

Part Three

Decomposed First Normal Form Table

ComputerModels

TagNumber	CompModel
32808	Apple
37691	Apple
57772	Dell
57222	Lenovo
59836	HP
77740	HP

Software

PackageID	SoftwarePackage
AC01	FIFA
DB32	Zork
DB33	Chrome
WP08	Portal
WP09	Microsoft Office

Installations

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

7. All primary keys idetified
    a. The primary key for ComputerModels is TagNumber
    b. The primary key for Software is PackageID
    c. The primary key for Installations is a composite key (PackageID+TagNumber)
8. All table functional dependencies identified
    a. ComputerModels--- TagNumber→CompModel
    b. Software--- PackageID→SoftwarePackage
    c. Installations
        i. PackageID+TagNumber→InstallDate
        ii. PackageID+TagNumber→SoftwareCostUSD
9. The tables above are in third normal form because they are in second normal form, and all multi key dependencies have been eliminated. This means that there are no non-key entities that are dependent on other non-key entities. Therefore, each non-key entity is depended on only a primary key.

10. LucidChart E/R Diagram