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Lab 7
3-19-17

Part One:

1. Having been just hired I would tell the CEO that the information gathered is good but the way it is organized can have some work done to it. To make sure structure is good, we would need multiple rows for each repeated PackageID. Once we have some structure the rest of the information will be easy to organize being the information is good.
- 2.

PackageID	TagNumber	InstallDate	SoftwareCostUSD
AC01	32808	09-13-2015	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. The primary key for the table above would be a combination of the PackageID and TagNumber.

Part Two:

4. Add 2 additional columns to the table, software package name and computer model

PackageID	TagNumber	PackageName	ComputerModel	InstallDate	SoftwareCostUSD
AC01	32808	Premium	Lenovo	09-13-2015	754.95
DB32	32808	Standard	Lenovo	12-03-2005	380.00
DB32	37691	Standard	Dell	06-15-2005	380.00
DB33	57772	Premium	HP	05-27-2005	412.77
WP08	32808	Enterprise	Lenovo	01-12-2006	185.00
WP08	37691	Enterprise	Dell	06-15-2005	227.50
WP08	57222	Enterprise	Mac	05-27-2005	170.24
WP09	59836	Standard	Asus	10-30-2005	35.00
WP09	77740	Standard	Gigabyte	05-27-2005	35.00

5. Functional Dependencies:
 - PackageID → PackageName: The PackageName is dependent on the PackageID which determines which package the client will receive.
 - TagNumber → ComputerModel: The ComputerModel is dependent on the TagNumber which identifies the model of the computer the software is installed on.
 - (PackageID, TagNumber) → InstallDate, SoftwareCostUSD: The SoftwareCostUSD is dependent on which package and computer model is chosen.
6. The table above is not in third normal form because it does not satisfy second normal form. There are partial dependencies on the primary key making it not fulfill third normal form.

Part Three: Decompose your 1NF table into 3NF tables.

SoftwarePackages

PackageID	PackageName
AC01	Premium
DB32	Standard
DB33	Premium
WP08	Enterprise
WP09	Standard

Computers

TagNumber	ComputerModel
32808	Lenovo
37691	Dell
57772	HP
57222	Mac
59836	Asus
77740	Gigabyte

Installations

PackageID	TagNumber	InstallDate	SoftwareCostUSD
AC01	32808	09-13-2015	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. The primary keys for each table are as listed:
 - SoftwarePackages: PackageID
 - Computers: TagNumber
 - Installations: Composite key of: PackageID, TagNumber
8. Functional Dependencies:
 - SoftwarePackages: PackageID → PackageName
 - Computers: TagNumber → ComputerModel

- Installations: (PackageID, TagNumber) → InstallDate, SoftwareCostUSD
9. The tables are now in third normal form because we have fixed the partial dependencies on the primary keys. Once the dependencies were fixed it now fits first, second, and third normal form.
10. ER Diagram:

