

Jillian Preece  
Lab 7  
Normalization 1

Part One

1. I would kindly tell him that his spreadsheet looks awesome, but there are a few changes I would like to make to make his data more consistent and easier to read. I would assure him that the problem is an easy fix and something that won't take long at all.

2.

PackageID	TagNumber	InstallDate	SoftwareCostUSD
AC01	32808	09-13-2005	754.94
DB32	32808	12-03-2005	380.00
DB32	37691	06-15-2005	380.00
DB33	57772	05-27-2005	412.77
WP08	32808	01-12-2005	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 PackageID combined with TagNumber, which makes it a composite key of {PackageID, TagNumber}.

## Part Two

4.

PackageID	TagNumber	InstallDate	SoftwareCostUSD	SoftwarePackageName	ComputerModel
AC01	32808	09-13-2005	754.94	GitHub	Lenovo
DB32	32808	12-03-2005	380.00	Spotify	Lenovo
DB32	37691	06-15-2005	380.00	Spotify	HP
DB33	57772	05-27-2005	412.77	WebRoot	Apple
WP08	32808	01-12-2005	185.00	Netflix	Lenovo
WP08	37691	06-15-2005	227.50	Netflix	Asus
WP08	57222	05-27-2005	170.24	Netflix	Apple
WP09	59836	10-30-2005	35.00	TurboTax	Dell
WP09	77740	05-27-2005	35.00	TurboTax	Acer

5. Functional Dependencies:

PackageID → SoftwarePackageName

PackageID, TagNumber → InstallDate, SoftwareCostUSD

TagNumber → ComputerModel

6. This table is not in third normal form because there is a multi-key dependency; InstallDate and SoftwareCostUSD both depend on the combination of PackageID and Tag Number.

## Part Three

### Computers:

TagNumber	ComputerModel
32808	Lenovo
37691	HP
57772	Apple
37691	Asus
59836	Dell
77740	Acer

### Installations:

PackageID	TagNumber	InstallationDate	SoftwareCostUSD
AC01	32808	09-13-2005	754.94
DB32	32808	12-03-2005	380.00
DB32	37961	06-15-2005	380.00
DB33	57772	05-27-2005	412.77
WP08	32808	01-12-2005	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

### Packages:

PackageID	SoftwarePackageName
AC01	Github
DB32	Spotify
DB33	WebRoot
WP08	Netflix
WP09	TurboTax

## 7. Primary Key

Computers: TagNumber

Installations: {PackageID, TagNumber}

Packages: PackageID

## 8. Functional Dependencies

Computers: TagNumber → ComputerModel

Installations: PackageID, TagNumber → InstallationDate, SoftwareCostUSD

Packages: PackageID → SoftwarePackageName

9. These new tables are in third normal form because they are in second normal form and also have no multi-key dependencies. They are in second normal form because they are in first normal form and have no partial key dependencies. They are in first normal form because there is no structure in any intersection of column and row.

10.

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