

1. Part 1

- a. The collection of data that is presented is okay but not great due the primary key, PackageID. The primary key has more than one of the same PackageID's in multiple other rows. We want to eliminate this so that the data becomes more precise.
- b.

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

- c. Primary key: PackageID and TagNumber due to the multiple PackageID's having the same value.

2. Part 2

- a.

PackageName	PackageID	ComputerMod	TagNumber	InstallDate	SoftwareCostUSD
MS Office	AC01	Lenovo	32808	09-13-2005	754.95
iTunes	DB32	Lenovo	32808	12-03-2005	380.00
iTunes	DB32	Microsoft	37691	06-15-2005	380.00
Adobe Reader	DB33	Dell	57772	05-27-2005	412.77
Chrome	WP08	Lenovo	32808	01-12-2006	185.00
Chrome	WP08	Microsoft	37691	06-15-2005	227.50
Chrome	WP08	HP	57222	05-27-2005	170.24
Notepad++	WP09	Apple	59836	10-30-2005	35.00
Notepad++	WP09	Toshiba	77740	05-27-2005	35.00

- b. PackageNumber, TagNumber → PackageName, PackageID, ComputerMod, InstallDate, SoftwareCostUSD

TagNumber → ComputerMod

PackageID → PackageName

- c. This table doesn't meet the requirements of 3NF because it also doesn't meet the requirements of 2NF. It does not meet the requirements because there is multiple primary keys, in this case it is PackageID and TagNumber. This makes it a partial key dependency, and the definition of 2NF is that "there are no partial dependencies" which means this table doesn't meet the 2NF requirements, therefore not meeting the 3NF requirements.

3. Part 3

a.

Package Software

PackageName	PackageID
MS Office	AC01
iTunes	DB32
Adobe Reader	DB33
Chrome	WP08
Notepad++	WP09

Computer

ComputerMod	TagNumber
Lenovo	32808
Microsoft	37691
Dell	57772
HP	57222
Apple	59836
Toshibo	77740

Installation Specs

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

b. Primary Keys

- Package software: PackageName
- Computer: ComputerMod
- Installation Specs: PacakgeID, TagNumber

c. Functional Dependencies

- Package Software: PackageName → PackageID

- Computer: ComputerMod → TagNumber
- Installation Specs: PackageID, TagNumber → InstallDate, SoftwareCostUSD

d. These tables are in 3NF, because there is no partial key dependencies found in the table. It also follows 2NF in that there are no multi-key dependencies and 1NF because all values are atomic. Since all three of these are meeting we can conclude that it is in 3NF.

ER – Diagram:

