

Jaime Engl

Professor Labouseur

Database Management

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Part One:

1. Wow! This is a great start, but I think I can improve upon this and make it better.
- 2.

<u>PackageID</u>	<u>TagNumber</u>	<u>InstallDate</u>	<u>SoftwareCostUSD</u>
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	57772	05-27-2005	170.24
WP09	59839	10-30-2005	35.00
WP09	77740	05-27-2005	35.00

3. In this snapshot you only need PackageID, TagNumber as a primary key in order to have unique values. However, in the future you may also need InstallDate (therefore PackageID, TagNumber, InstallDate) in order to have a unique primary key. So in order to have a better database in the future, I believe the primary key is all three, PackageID, TagNumber, and InstallDate (all underlined).

Part Two:

- 1.

<u>PackageID</u>	<u>TagNumber</u>	<u>InstallDate</u>	<u>SoftwareName</u>	<u>ComputerModel</u>	<u>SoftwareCostUSD</u>
AC01	32808	09-13-2005	Zork	HP	754.95
DB32	32808	12-03-2005	Portal	HP	380.00
DB32	37691	06-15-2005	Portal	Lenovo	380.00
DB33	57772	05-27-2005	Pokemon	Mac	412.77
WP08	32808	01-12-2006	Mario Kart	HP	185.00
WP08	37691	06-15-2005	Mario Kart	Acer	227.50
WP08	57222	05-27-2005	Mario Kart	Toshiba	170.24
WP09	59839	10-30-2005	Super Mario Galaxy	Vaio	35.00
WP09	77740	05-27-2005	Super Mario Galaxy	LG	35.00

2. Functional Dependencies

PackageID → SoftwareName

TagNumber → ComputerModel

PackageID, TagNumber → InstallDate

PackageID, TagNumber, InstallDate → SoftwareCostUSD

3. This is not in 3NF because it's not in 2NF which is one of the conditions of 3NF. It is not in 2NF because for example SoftwareName is dependent on PackageID which is only part of the primary key which makes it a partial dependency that violates 2NF.

Part Three:

1.

Software	
<u>PackageID</u>	SoftwareName
AC01	Zork
DB32	Portal
DB33	Pokemon
WP08	Mario Kart
WP09	Super Mario Galaxy

Computers	
<u>TagNumber</u>	ComputerModel
32808	HP
37691	Lenovo
57772	Mac
37691	Acer
57222	Toshiba
59839	Vaio
77740	LG

Installations			
<u>PackageID</u>	<u>TagNumber</u>	<u>InstallDate</u>	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	57772	05-27-2005	170.24
WP09	59839	10-30-2005	35.00
WP09	77740	05-27-2005	35.00

The primary keys for each table are underlined. In the first table, it is PackageID. In the second table, it is TagNumber. In the last table, it is PackageID, TagNumber, and InstallDate.

2. Functional Dependencies

PackageID → SoftwareName

TagNumber → ComputerModel

PackageID, TagNumber, InstallDate → SoftwareCostUSD

3. The new tables are 3NF because in order to be in 3NF it must be in 2NF and all non-key attributes are not dependent on any other non-key attributes. The new tables are in 2NF because there are no partial dependencies. Also there are no instances in which non-key attributes are dependent on other non-key attributes. Therefore, these tables are in 3NF.

4. E-R Diagram

