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Database Systems – CMPT 308 114

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Lab 7

1. Part 1

- a. This is a good collection, but it needs to be better organized. For example, the primary key in his collection is PackageID, but there are multiple rows that have the same PackageID, not making it a good primary key.

b. 1NF

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. The primary key is PackageID, but it is then also sorted by TagNumber. For example, PackageID can identify more than one computer, so the TagNumber then identifies the specific computer.

2. Part 2

a.

PackageName	CompModel	PackageID	TagNumber	InstallDate	SoftwareCostUSD
Spotify	IBM	AC01	32808	09-13-2005	754.95
Chrome	IBM	DB32	32808	12-03-2005	380.00
Chrome	Apple	DB32	37691	06-15-2005	380.00
Firefox	Microsoft	DB33	57772	05-27-2005	412.77
MS Word	IBM	WP08	32808	01-12-2006	185.00
MS Word	Apple	WP08	37691	06-15-2005	227.50
MS Word	HP	WP08	57222	05-27-2005	170.24
MS Excel	Dell	WP09	59836	10-30-2005	35.00
MS Excel	Lenovo	WP09	77740	05-27-2005	35.00

- b. PackageID, TagNumber → PackageName, CompModel, InstallDate, SoftwareCostUSD

PackageID → PackageName

TagNumber → CompModel

- c. This is not in 3NF because it does not make 2NF. In order for it to be in 2NF the tables need one primary key, this does have two primary keys (PackageID & TagNumber), making it a partial key dependency).

3. Part 3

Software

PackageName	PackageID
Spotify	AC01
Chrome	DB32
Firefox	DB33
MS Word	WP08
MS Excel	WP09

Computer

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

Installation

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
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WP08	57222	05-27-2005	170.24
WP09	59836	10-30-2005	35.00
WP09	77740	05-27-2005	35.00

- a. Primary Keys –
 Software: PackageName
 Computer: CompModel
 Installation: PackageID, TagNumber
- b. Functional Dependencies
 Software: PackageName → PackageID
 Computer: CompModel → TagNumber
 Installation: PackageID, TagNumber → InstallDate, SoftwareCostUSD
- c. The new tables are in 3NF because they now do not have partial key dependencies. The data is atomic and there is no duplicate data. There is also now no multiple key dependencies.

d. ER Diagram

