

Lab Seven: Normalization One

Part One

- 1) At first glance, it is clear to me that the spreadsheet is not in First Normal Form, meaning the data is not completely atomic. This means that the spreadsheet is also not in the Second or Third Normal Forms. It's important to have a normalized table in order to avoid certain anomalies. In this case, there are blank values under *PackageID* and the same *TagNumbers* are used and the user would, therefore, have to modify multiple records at a time in order to update one tag number (update anomaly).

2)

PackageID	TagNumber	InstallDate	SoftwareCostUSD
AC01	32808	9-13-2005	754.95
DB32	32808	12-03-2005	380.00
DB32	37691	6-15-2005	380.00
DB33	57772	5-27-2005	412.77
WP08	32808	1-12-2006	185.00
WP08	37691	6-15-2005	227.50
WP08	57222	5-27-2005	170.24
WP09	59836	10-30-2005	35.00
WP09	77740	5-27-2005	35.00

- 3) Because there is no primary key specified, the most simplified key would be the composite key of *PackageID* and *TagNumber*.

4)

PackageID	TagNumber	InstallDate	SoftwareCostUSD	SoftwarePkgName	ComputerModel
AC01	32808	9-13-2005	754.95	RED	IBM
DB32	32808	12-03-2005	380.00	ORANGE	IBM
DB32	37691	6-15-2005	380.00	YELLOW	APPLE
DB33	57772	5-27-2005	412.77	YELLOW	HP
WP08	32808	1-12-2006	185.00	GREEN	IBM
WP08	37691	6-15-2005	227.50	GREEN	APPLE
WP08	57222	5-27-2005	170.24	GREEN	LENOVO
WP09	59836	10-30-2005	35.00	BLUE	DELL
WP09	77740	5-27-2005	35.00	BLUE	CHROMEBOOK

- 5) PackageID -> PackageName
TagNumber -> ComputerModel
PackageID, TagNumber -> InstallDate, SoftwareCostUSD

6) This table is not in third normal form because there are columns in the table that do not directly relate to the primary key: PackageID, TagNumber. Third Normal Form requires that no transitive dependencies exist among non-key attributes.

- 7) Installations -> PackageID, TagNumber
SoftwarePackages -> PackageID
Computers -> TagNumber

SoftwarePackages

PackageID	SoftwarePkgName
AC01	RED
DB32	ORANGE
DB32	YELLOW
WP08	GREEN
WP09	BLUE

Installations

PackageID	TagNumber	InstallDate	SoftwareCostUSD
AC01	32808	9-13-2005	754.95
DB32	32808	12-03-2005	380.00
DB32	37691	6-15-2005	380.00
DB33	57772	5-27-2005	412.77
WP08	32808	1-12-2006	185.00
WP08	37691	6-15-2005	227.50
WP08	57222	5-27-2005	170.24
WP09	59836	10-30-2005	35.00
WP09	77740	5-27-2005	35.00

Computers

TagNumber	ComputerModel
32808	IBM
37691	APPLE
57772	HP
57222	LENOVO
59836	DELL
77740	CHROMEBOOK

- 8) SoftwarePackages: PackageID -> SoftwarePkgName
Computers: TagNumber -> ComputerModel
Installations: PackageID, TagNumber -> InstallDate, SoftwareCostUSD

9) These tables are in third normal form because they do not contain columns which do not directly relate to the primary keys.

10)

