Dietrich Mosel
Professor Labouseur
Database Management
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Lab 7: Normalization One

PackageID	TagNumber	InstallDate	SoftwareCostUSD
AC01	32808	09-13-2005	754.95
DB32	32808	12-03-2005	380.00
	37691	06-15-2005	380.00
DB33	57772	05-27-2005	412.77
WP08	32808	01-12-2006	185.00
	37691	06-15-2005	227.50
	57222	05-27-2005	170.24
WP09	59836	10-30-2005	35.00
	77740	05-27-2005	35.00

Part One:

1. If the Tycho CEO were to show me the spreadsheet right after I had signed my consulting agreement and asked what I thought, I would have to be honest whether it was good or bad. In this case, I would make a few edits because it is not in first normal form. First, the columns TagNumber, InstallDate and SoftwareCostUSD contains multiple values for one PackageID which does not make it atomic. I would add a PackageID for each absent area to put it into 1NF.

2.

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

3. There is actually more than one primary key in this table. PackageID and TagNumber are both primary keys since there is only one PackageID for each TagNumber that uniquely identifies it. The packageID numbers distinguish each specific TagNumber, InstallDate and SoftwareCostUSD. The primary key is mandatory as each entity occurrence has a value for the primary key. Together, the PackageID and TagNumber reference specific InstallDate and SoftwareCostUSD items.

Part Two:

4.

PackageID	TagNumber	InstallDate	SoftwareCostUSD	Software Package Name	Computer Model
AC01	32808	09-13-2005	754.95	Dogma	HP
DB32	32808	12-03-2005	380.00	Zork	HP
DB32	37691	06-15-2005	380.00	Zork	Apple
DB33	57772	05-27-2005	412.77	Minecraft	Lenovo
WP08	32808	01-12-2006	185.00	Portal	HP
WP08	37691	06-15-2005	227.50	Portal	Apple
WP08	57222	05-27-2005	170.24	Portal	Microsoft
WP09	59836	10-30-2005	35.00	Civilization	IBM
WP09	77740	05-27-2005	35.00	Civilization	Dell

5. The functional dependencies in this table are…

   {PackageID} → {Software Package Name}

   {TagNumber} → {Computer Model}

   {TagNumber, PackageID} →{InstallDate, SoftwareCostUSD}

6. This new table is not in third normal form because it does not satisfy second normal form parameters (What? Not Where!?) and there are no multi-key dependencies. There are multiple columns in the table that do not serve to describe what the primary key identifies.

Part 3:

Software Package Table

PackageID	Software Package Name
AC01	Dogma
DB32	Zork
DB32	Zork
DB33	Minecraft
WP08	Portal
WP08	Portal
WP08	Portal
WP09	Civilization
WP09	Civilization

Computer Model Table

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

General Package Table

TagNumber	PackageID	InstallDate	SoftwareCostUSD
32808	AC01	09-13-2005	754.95
32808	DB32	12-03-2005	380.00
37691	DB32	06-15-2005	380.00
57772	DB33	05-27-2005	412.77
32808	WP08	01-12-2006	185.00
37691	WP08	06-15-2005	227.50
57222	WP08	05-27-2005	170.24
59836	WP09	10-30-2005	35.00
77740	WP09	05-27-2005	35.00

7. The primary key for the software package table is PackageID

   The primary key for the computer model table is TagNumber
   The primary keys for the general package table are TagNumber and PackageID

8. The functional dependencies for the software package table are…

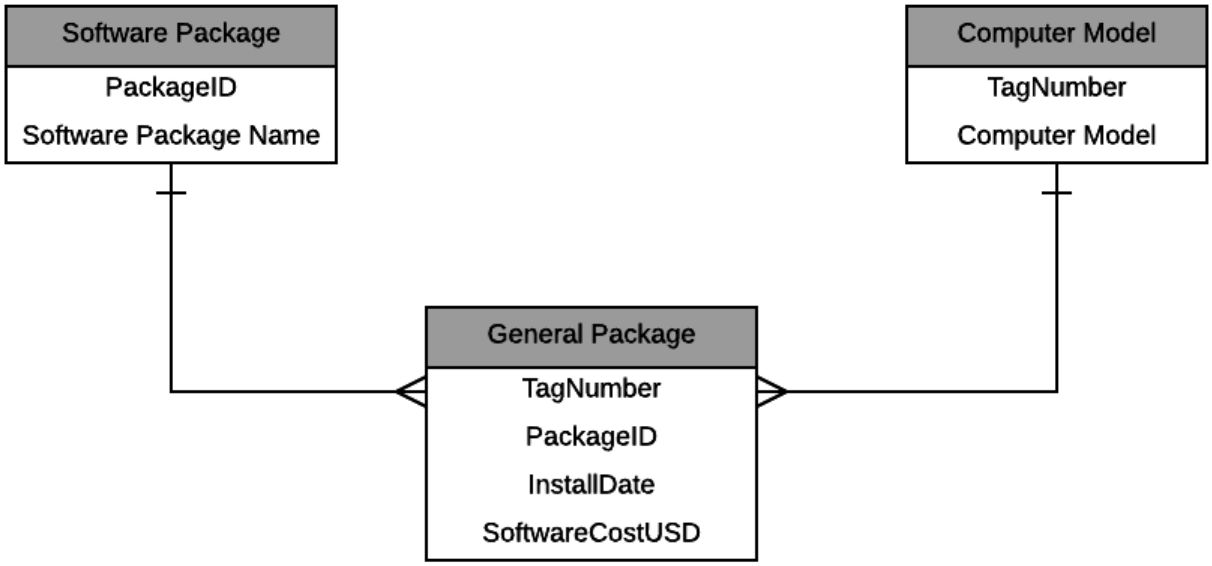
   {PackageID} → {Software Package Name}
   The functional dependencies for the computer model table are…

   {TagNumber} → {Computer Model}
   The functional dependencies for the general package table are…

   {TagNumber, PackageID} →{InstallDate, SoftwareCostUSD}

9. The new tables are in third normal form because they are in second normal form (What? Not Where!?) and because all rows are unique. There are no repeating values and each row has information that cannot be called upon from a different row.

10.


Software Package
PackageID
Software Package Name
Computer Model
TagNumber
Computer Model
General Package
TagNumber
PackageID
InstallDate
SoftwareCostUSD