Krisztián Köves 3/27/2016 CMPT 308 Section 111

Lab 007 – Normalization One

Part One

1. My reply: "This is a good start, but it needs some improvement so that we will be able get more information from the database and keep the information consistent."

2. Table in first normal form:

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. The primary key is a composite key of the PackageID and TagNumber columns.

Part Two

4. Table with two more columns:

PackageID	TagNumber	ComputerModel	PackageName	InstallDate	SoftwareCostUSD
AC01	32808	Lenovo	Lotus Notes	09-13-2005	754.95
DB32	32808	Dell	Oracle DB	12-03-2005	380.00
DB32	37691	Dell	Oracle DB	06-15-2005	380.00
DB33	57772	Dell	SQL Server	05-27-2005	412.77
WP08	32808	Lenovo	MS Office	01-12-2006	185.00
WP08	37691	Lenovo	MS Office	06-15-2005	227.50
WP08	57222	Lenovo	MS Office	05-27-2005	170.24
WP09	59836	Apple	MS Word	10-30-2005	35.00
WP09	77740	Apple	MS Word	05-27-2005	35.00

- 5. Functional dependencies:
 - a. (PackageID, TagNumber) \rightarrow InstallDate
 - b. (PackageID, TagNumber) \rightarrow SoftwareCostUSD
 - c. $PackageID \rightarrow PackageName$
 - d. TagNumber \rightarrow ComputerModel
- 6. This table is not in third normal form because it is not in second normal form, since we have partial dependencies on the primary key, as shown above.

Part Three

7. Determinants/primary keys for all tables:

a. Computers table: TagNumber

b. Installs table: (TagNumber, PackageID)

c. Packages table: PackageID

8. Functional dependencies for all tables:

a. Computers table: TagNumber \rightarrow ComputerModel

b. Installs table:

i. (TagNumber, PackageID) \rightarrow InstallDate

ii. (TagNumber, PackageID) \rightarrow SoftwareCostUSD

c. Packages table: PackageID \rightarrow PackageName

- 9. The new tables are in first normal form, and there are no partial dependencies, so it is in second normal form, and the tables have no multiple dependencies, so it is in third normal form as well. This table is in Boyce-Codd normal form as well, since there are no transitive interior dependencies (foreign keys in the same table).
- 10. Entity relationship (E/R) diagram:

Computers		
TagNumber	ComputerModel	
32808	Lenovo	
32808	Dell	
37691	Dell	
57772	Dell	
32808	Lenovo	
37691	Lenovo	
57222	Lenovo	
59836	Apple	
77740	Apple	

Packages			
PackageID	PackageName		
AC01	Lotus Notes		
DB32	Oracle DB		
DB32	Oracle DB		
DB33	SQL Server		
WP08	MS Office		
WP08	MS Office		
WP08	MS Office		
WP09	MS Word		
WP09	MS Word		

Installs					
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		