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Lab 7 – Normalization Part I

Part One:

1. In response to the spreadsheet made by Tycho CEO Fred Johnson (A.K.A. my new boss), I would politely tell him that the spreadsheet is certainly a good start and thank him for his effort in organizing his company's data to help with my assignment. However, I would also mention that his spreadsheet could, with my help, be organized more optimally to make desired data easier to access (Of course I would also laugh about it with my friends later).
- 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. The primary key of this table can be the composite key of (PackageID, TagNumber) because it is very unlikely that the same software package will be installed on the same computer twice.

Part Two:

4.

PackageID	PackageName	TagNumber	ComputerModel	InstallDate	SoftwareCostUSD
AC01	James Bond Filmography	32808	GLaDOS	09-13-2005	754.95
DB32	Super Meat Boy	32808	GLaDOS	12-03-2005	380.00
DB32	Super Meat Boy	37691	FLUDD	06-15-2005	380.00
DB33	Earthbound	57772	R7037	05-27-2005	412.77
WP08	FTL	32808	GLaDOS	01-12-2006	185.00
WP08	FTL	37691	FLUDD	06-15-2005	227.50
WP08	FTL	57222	Absolutely Safe Capsule	05-27-2005	170.24
WP09	Kingdom Hearts	59836	TEC	10-30-2005	35.00
WP09	Kingdom Hearts	77740	EVE	05-27-2005	35.00

5. Functional Dependencies:

- PackageID → PackageName
- TagNumber → ComputerModel

- (PackageID, TagNumber) → InstallDate
 - (PackageID, InstallDate) → SoftwareCostUSD
6. This new table cannot be in third normal form because if the primary key for the table is (PackageID, TagNumber), however there are dependencies in the table for which the determinant is not this primary key. In order to be in third normal form, a table must have all fields have a functional dependency on the primary key and the primary key itself cannot have a functional dependency. Since this table does not satisfy this condition, then it cannot be in third normal form.

Part Three:

Software Packages

PackageID	PackageName
AC01	James Bond Filmography
DB32	Super Meat Boy
DB33	Earthbound
WP08	FTL
WP09	Kingdom Hearts

Station Computers

TagNumber	ComputerModel
32808	GLaDOS
37691	FLUDD
57772	R7037
57222	Absolutely Safe Capsule
59836	TEC
77740	EVE

Installation

PackageID	TagNumber	InstallDate
AC01	32808	09-13-2005
DB32	32808	12-03-2005
DB32	37691	06-15-2005
DB33	57772	05-27-2005
WP08	32808	01-12-2006
WP08	37691	06-15-2005
WP08	57222	05-27-2005
WP09	59836	10-30-2005
WP09	77740	05-27-2005

Company Cost

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

7. The primary key for “Software Packages” is PackageID. The primary key for “Station Computers” is TagNumber. The primary key for “Installation” is (PackageID, TagNumber). The primary key for “Company Cost” is (PackageID, InstallDate).
8. Functional Dependencies:
- **Software Packages:** PackageID → PackageName
 - **Station Computers:** TagNumber → ComputerModel
 - **Installation:** (PackageID, TagNumber) → InstallDate
 - **Company Cost:** (PackageID, InstallDate) → SoftwareCostUSD
9. The new tables are all in third normal form because each one has a single primary key that acts as the determinant in every functional dependency contained within the table.