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Database Systems Lab 7

Part 1

1. You have created a great spreadsheet, the organization is generally speaking easy to read and asses. The separation in the packageID column is done well regarding human readability, however in database implementation, the sections should contain a packageID for each TagNumber associated. Even though they are laid out in separated sections, the blank spaces for additional TagNumbers assigned look as though the PackageID is null for any TagNumber beyond the first for each PackageID. In addition, there is too much data being displayed that functionally dependent on more than one key and should be broken down into smaller tables to comply with normalization rules.

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(s) are the PackageID, and the TagNumber

Part 2 - Add two columns of new data: one column for software package name (e.g., Zork, Portal, etc.) and one for computer model (e.g., IBM, Apple, etc.). Be sure that your new data is consistent with the original data.

PackageID	TagNumber	InstallDate	SoftwareCostUSD	PackageName	ComputerModel
AC01	32808	09-13-2005	754.95	Zork	IBM
DB32	32808	12-03-2005	380.00	Portal	IBM
DB32	37691	06-15-2005	380.00	Portal	Apple
DB33	57772	05-27-2005	412.77	Cake	Microsoft
WP08	32808	01-12-2006	185.00	isAlie	IBM
WP08	37691	06-15-2005	227.50	isAlie	Apple
WP08	57222	05-27-2005	170.24	isAlie	Microsoft
WP09	59836	10-30-2005	35.00	GLaDOS	Microsoft
WP09	77740	05-27-2005	35.00	GLaDOS	IBM

4. Functional dependencies:
    a. PackageID -> PackageName
    b. TagNumber -> ComputerModel
    c. PackageID, TagNumber -> SoftwareCostUSD, InstallDate

5. This is not in 3rd normal form because it contains partial dependencies, which violates 2nd normal form.

Part 3 -

6. ID all PK's (determinants) for all tables
    a. Software Packages: PackageID
    b. Computer Assets: TagNumber
    c. Installations: PackageID, TagNumber

7. ID all functional dependencies for all tables
    a. Software Packages: PackageID -> PackageName
    b. Computer Assets: TagNumber -> ComputerModel
    c. Installations: PackageID, TagNumber -> SoftwareCostUSD, InstallDate

8. The new tables are in 3rd normal form because they follow the rules of both 1st and 2nd normal forms, and all nonprime attributes are dependent on the primary key(s). It also has no transitive dependencies meaning it is also in BCNF.

9. Draw a beautiful E/R diagram