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Database Management

CMPT 308L

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<u>**Lab Assignment 7: Normalization One**</u>

<u>**Part 1:**</u>

1. I would reply to the CEO by first thanking him for choosing me as his database consultant. I would also thank him for providing me with the informational spreadsheet and also inform him that it will be a very helpful tool in the development of the database for his organization. I'd also explain to him that there are ways that the spreadsheet can be improved and enhanced to better serve him and his organization.

2. <u>Data in 1NF</u>

PackageID	TagNumber	InstallDate	SoftwareCostUSD
AC01	32808	09-13-1995	754.95
DB32	32808	12-03-1995	380.00
DB32	37691	06-15-1995	380.00
DB33	57772	05-27-1995	412.77
WP08	32808	01-12-1996	185.00
WP08	37691	06-15-1995	227.50
WP08	57222	05-27-1995	170.24
WP09	59836	10-30-1995	35.00
WP09	77740	05-27-1995	35.00

3. The Primary Key in this table would be considered a composite key made up of the PackageID column and the TagNumber column.

Part 2:

    4.   Updated Table

PackageID	PackageName	TagNumber	Model	InstallDate	SoftwareCostUSD
AC01	Zork	32808	HP	09-13-1995	754.95
DB32	Portal	32808	HP	12-03-1995	380.00
DB32	Portal	37691	Apple	06-15-1995	380.00
DB33	Microsoft Office	57772	Toshiba	05-27-1995	412.77
WP08	Windows 8	32808	HP	01-12-1996	185.00
WP08	Windows 8	37691	Apple	06-15-1995	227.50
WP08	Windows 8	57222	Toshiba	05-27-1995	170.24
WP09	Adobe	59836	Asus	10-30-1995	35.00
WP09	Adobe	77740	Dell	05-27-1995	35.00

    5.   Functional Dependencies
          1. PackageID and PackageName
          2. TagNumber and Model
          3. PackageID/TagNumber and InstallDate/SoftwareCostUSD

    6. This new table is **not** in third normal form because some of the attributes in the table are not fully dependent on the composite primary key. There is also the potential risk of the existence of anomalies that could compromise the validity and accuracy of the data. Also, this table does not fulfill the necessary components of Codd's 3rd Normal Form Rules and therefore is not in 3rd Normal Form.

Part 3:

    7.   Primary Keys (Determinants)
          1. Installations Table – PackageID, TagNumber
          2. Packages Table – PackageID
          3. Computers Table – TagNumber

    8.   Functional Dependencies
          1. Installations Table
              • PackageID/TagNumber and InstallDate/SoftwareCostUSD
          2. Packages Table
              • PackageID and PackageName
          3. Computers Table
              • TagNumber and Model

9. The new tables are in third normal form because the data is atomic, there are no partial dependencies, and there are no instances of multiple key dependencies. These tables fulfill all of the requirements set forth in Ted Codd's 3rd Normal Form Rules.

10. ER Diagram

Installations

PackageID	TagNumber	InstallDate	SoftwareCostUSD
AC01	32808	09-13-1995	754.95
DB32	32808	12-03-1995	380.00
DB32	37691	06-15-1995	380.00
DB33	57772	05-27-1995	412.77
WP08	32808	01-12-1996	185.00
WP08	37691	06-15-1995	227.50
WP08	57222	05-27-1995	170.24
WP09	59836	10-30-1995	35.00
WP09	77740	05-27-1995	35.00

Packages

PackageID	PackageName
AC01	Zork
DB32	Portal
DB33	MS Office
WP08	Windows 8
WP09	Adobe

Computers

TagNumber	Model
32808	HP
37691	Apple
57772	Toshiba
59836	Asus
77740	Dell