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Lab 7

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Part One:

1. The current spreadsheet could not translate directly to a database. The table data is not atomic. In order for a relational model to work, there cannot be groups of data within one cell. There is also a lack of a primary key because they repeat multiple times. There needs to be a way to uniquely identify a particular software installation

2.

| **PackID** | **TagNum** | **InstallDate** | **SoftwareCost** |
|---|---|---|---|
| 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. Based on the current table design, there is no definitive primary key because the entries of PackID and TagNum repeat multiple times and alone, neither is sufficient to uniquely identify a row. Therefore, assuming there are no reinstallations a Candidate Key of (PackID, TagNum) will do.

Part Two:

4.

| **PackID** | **Software Name** | **TagNum** | **Computer Model** | **InstallDate** | **SoftwareCost** |
|---|---|---|---|---|---|
| AC01 | Solitare | 32808 | Apple | 09-13-1995 | 754.95 |
| DB32 | Adobe | 32808 | Apple | 12-03-1995 | 380.00 |
| DB32 | Adobe | 37691 | Lenovo | 06-15-1995 | 380.00 |
| DB33 | Office | 57772 | HP | 05-27-1995 | 412.77 |
| WP08 | McAfee | 32808 | Apple | 01-12-1996 | 185.00 |
| WP08 | McAfee | 37691 | Lenovo | 06-15-1995 | 227.50 |
| WP08 | McAfee | 57222 | HP | 05-27-1995 | 170.24 |
| WP09 | VPN | 59836 | Acer | 10-30-1995 | 35.00 |
| WP09 | VPN | 77740 | Dell | 05-27-1995 | 35.00 |

5.

| **Functional Dependencies** |
|---|
| PackID ➔Software Name |
| TagNum ➔Computer Model |
| PackID➔ Software Cost |
| Software Name ➔PackID |
| PackID, TagNum, InstallDate➔ SoftwareCost |

6. A candidate key such as (PackID, TagNum) could be used to uniquely identify an entry assuming the software was only installed once in a machine history, but an issue arises because the software cost is. Software cost is then NOT dependent upon the software package, nor is it dependent upon what combination of machine and software it may be.

7.

| **tblSoftware** | |
|---|---|
| **PackID** | **Software Name** |
| AC01 | Solitare |
| DB32 | Adobe |
| DB33 | Office |
| WP08 | McAfee |
| WP09 | VPN |

| **tblComputer** | |
|---|---|
| **TagNum** | **Model** |
| 32808 | Apple |
| 37691 | Lenovo |
| 57772 | HP |
| 59836 | Acer |
| 77740 | Dell |

| **tblInstallationCost** | | | |
|---|---|---|---|
| **PackID** | **TagNum** | **InstallDate** | **SoftwareCost** |
| 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 |

| tblInstallations | | | | | |
|---|---|---|---|---|---|
| **PackID** | **Software Name** | **TagNum** | **Model** | **InstallDate** | **SoftwareCost** |
| AC01 | Solitare | 32808 | Apple | 09-13-1995 | 754.95 |
| DB32 | Adobe | 32808 | Apple | 12-03-1995 | 380.00 |
| DB32 | Adobe | 37691 | Lenovo | 06-15-1995 | 380.00 |
| DB33 | Office | 57772 | HP | 05-27-1995 | 412.77 |
| WP08 | McAfee | 32808 | Apple | 01-12-1996 | 185.00 |
| WP08 | McAfee | 37691 | Lenovo | 06-15-1995 | 227.50 |
| WP08 | McAfee | 57222 | HP | 05-27-1995 | 170.24 |
| WP09 | VPN | 59836 | Acer | 10-30-1995 | 35.00 |
| WP09 | VPN | 77740 | Dell | 05-27-1995 | 35.00 |

**Primary Keys**

| Software | Computer | Installation Cost | Installations |
|---|---|---|---|
| PackID | TagNum | (PackID, TagNum, InstallDate) | (PackID, TagNum) |

8.
**Functional Dependencies**

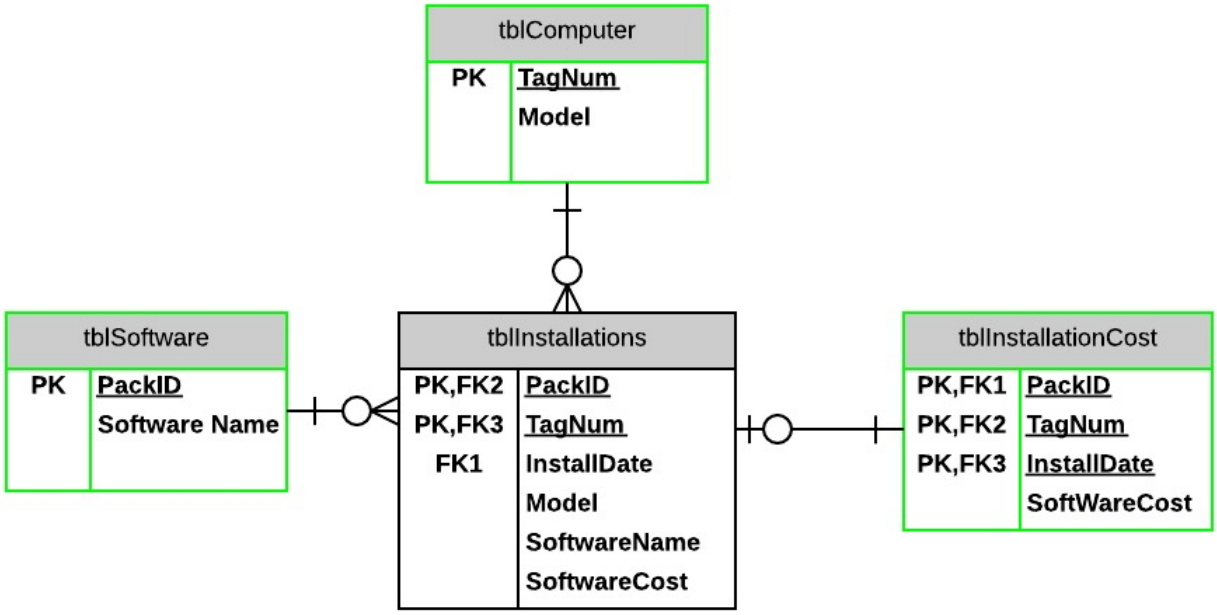
Software
PackID ➔Software Name
Software Name➔PackID

Computers
TagNum ➔Computer Model

Installations
PackID, TagNum ➔InstallDate
PackID, TagNum, InstallDate ➔SoftwareCost

9. All of the tables are comprised of attributes that depend on the Primary Key. There are no longer any transitive functional dependencies.

10.


tblComputer
PK
TagNum
Model
tblSoftware
PK
PackID
Software Name
tblInstallations
PK,FK2
PackID
PK,FK3
TagNum
FK1
InstallDate
Model
SoftwareName
SoftwareCost
tblInstallationCost
PK,FK1
PackID
PK,FK2
TagNum
PK,FK3
InstallDate
SoftWareCost