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Lab 7

3-19-17

**Part One:**

1. Having been just hired I would tell the CEO that the information gathered is good but the way it is organized can have some work done to it. To make sure structure is good, we would need multiple rows for each repeated PackageID. Once we have some structure the rest of the information will be easy to organize being the information is good.

|  |  |  |  |
| --- | --- | --- | --- |
| PackageID | TagNumber | InstallDate | SoftwareCostUSD |
| AC01 | 32808 | 09-13-2015 | 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 |

1. The primary key for the table above would be a combination of the PackageID and TagNumber.

**Part Two:**

1. Add 2 additional columns to the table, software package name and computer model

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| PackageID | TagNumber | PackageName | ComputerModel | InstallDate | SoftwareCostUSD |
| AC01 | 32808 | Premium | Lenovo | 09-13-2015 | 754.95 |
| DB32 | 32808 | Standard | Lenovo | 12-03-2005 | 380.00 |
| DB32 | 37691 | Standard | Dell | 06-15-2005 | 380.00 |
| DB33 | 57772 | Premium | HP | 05-27-2005 | 412.77 |
| WP08 | 32808 | Enterprise | Lenovo | 01-12-2006 | 185.00 |
| WP08 | 37691 | Enterprise | Dell | 06-15-2005 | 227.50 |
| WP08 | 57222 | Enterprise | Mac | 05-27-2005 | 170.24 |
| WP09 | 59836 | Standard | Asus | 10-30-2005 | 35.00 |
| WP09 | 77740 | Standard | Gigabyte | 05-27-2005 | 35.00 |

1. Functional Dependencies:

* PackageID 🡪 PackageName: The PackageName is dependent on the PackageID which determines which package the client will receive.
* TagNumber 🡪 ComputerModel: The ComputerModel is dependent on the TagNumber which identifies the model of the computer the software is installed on.
* (PackageID, TagNumber) 🡪 InstallDate, SoftwareCostUSD: The SoftwareCostUSD is dependent on which package and computer model is chosen.

1. The table above is not in third normal form because it does not satisfy second normal form. There are partial dependencies on the primary key making it not fulfill third normal form.

**Part Three:** Decomposeyour 1NF table into 3NFtables.

**SoftwarePackages Computers**

|  |  |
| --- | --- |
| PackageID | PackageName |
| AC01 | Premium |
| DB32 | Standard |
| DB33 | Premium |
| WP08 | Enterprise |
| WP09 | Standard |

|  |  |
| --- | --- |
| TagNumber | ComputerModel |
| 32808 | Lenovo |
| 37691 | Dell |
| 57772 | HP |
| 57222 | Mac |
| 59836 | Asus |
| 77740 | Gigabyte |

**Installations**

|  |  |  |  |
| --- | --- | --- | --- |
| PackageID | TagNumber | InstallDate | SoftwareCostUSD |
| AC01 | 32808 | 09-13-2015 | 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 |

1. The primary keys for each table are as listed:

* SoftwarePackages: PackageID
* Computers: TagNumber
* Installations: Composite key of: PackageID, TagNumber

1. Functional Dependencies:

* SoftwarePackages: PackageID 🡪 PackageName
* Computers: TagNumber 🡪 ComputerModel
* Installations: (PackageID, TagNumber) 🡪 InstallDate, SoftwareCostUSD

1. The tables are now in third normal form because we have fixed the partial dependencies on the primary keys. Once the dependencies were fixed it now fits first, second, and third normal form.
2. ER Diagram:

