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Normalization 1

Monday, October 28, 13

**Part One:**

1. I would say it is pretty much a mess. A few of his columns contain multivalued fields which is a big problem.

2.

|  |  |  |  |
| --- | --- | --- | --- |
| **PackageID** | **TagNumber** | **InstallDate** | **SoftwareCostUSD** |
| AC01 | 32808 | 2005-09-13 | 754.95 |
| DB32 | 32808 | 2005-12-03 | 380.00 |
| DB32 | 37691 | 2005-06-15 | 380.00 |
| DB33 | 57772 | 2005-05-27 | 412.77 |
| WP08 | 32808 | 2006-01-12 | 185.00 |
| WP08 | 37691 | 2005-06-15 | 227.50 |
| WP08 | 57222 | 2005-05-27 | 170.24 |
| WP09 | 59836 | 2005-10-30 | 35.00 |
| WP09 | 77740 | 2005-05-27 | 35.00 |
|  |  |  |  |
|  |  |  |  |

3. The primary would be the composite key of PackageID and TagNumber.

**Part Two:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PackageID** | **TagNumber** | **InstallDate** | **SoftwareCostUSD** | **SoftwarePkgName** | **Computer Model** |
| AC01 | 32808 | 2005-09-13 | 754.95 | Zork | Apple |
| DB32 | 32808 | 2005-12-03 | 380.00 | Cygwin | Apple |
| DB32 | 37691 | 2005-06-15 | 380.00 | Cygwin | HP |
| DB33 | 57772 | 2005-05-27 | 412.77 | Homebrew | Asus |
| WP08 | 32808 | 2006-01-12 | 185.00 | Portal | Apple |
| WP08 | 37691 | 2005-06-15 | 227.50 | Portal | HP |
| WP08 | 57222 | 2005-05-27 | 170.24 | Portal | Asus |
| WP09 | 59836 | 2005-10-30 | 35.00 | Steam | Alienware |
| WP09 | 77740 | 2005-05-27 | 35.00 | Steam | Lenovo |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

**Functional Dependencies:**

TagNumber → ComputerModel

PackageID → SoftwarePkgName

{InstallDate, PackageID, TagNumber} → SoftwareCostUSD

-This table is not in third normal form because SoftwareCostUSD (a non-prime attribute), is not dependant on TagNumber. Tag number is part of the primary key. Therefore SoftwareCostUSD is not directly dependant on every superkey, violating the second clause of third normal form.

**Part Three:**

I created three tables: Software, Computers, Installments. Their primary keys are as follows.

**Determinants:**

Software: PackageID

Computers: TagNumber

Installments: {PackageID,TagNumber,InstallDate)

**Functional Dependencies:**

**(by table)**

**Computers**

TagNumber → ComputerModel

**Software**

PackageID → SoftwarePkgName

**Installments**

{PackageID,TagNumber,InstallDate}→ SoftwareCostUSD

These tables are in 3rd normal form because they are ACID compliant, no non prime attributes (namely computermodel, softwarepkgname, or softwarecostusd) is dependant on candidate keys in any table, and any non prime attribute such as cost are dependant on the key,the whole key, and nothing but the key.

