**Part 1**

1. After having just signed my consulting agreement and being asked what I think of the data, I would reply with, “This dataset is a great beginning for the database to come, so I’ll take a look and see if this can be reorganized to become more efficient in day to day operations.”
2. 1NF

| **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 |

1. The primary key would be PackageID.

**Part 2**

| **PackageID** | **TagNumber** | **InstallDate** | **SoftwareCostUSD** |
| --- | --- | --- | --- |
| Zork | Apple | 09-13-2005 | 754.95 |
| Portal | Apple | 12-03-2005 | 380.00 |
| Portal | IBM | 06-15-2005 | 380.00 |
| Bosco | Windows | 05-27-2005 | 412.77 |
| Maya | Apple | 01-12-2006 | 185.00 |
| Maya | IBM | 06-15-2005 | 227.50 |
| Maya | Linux | 05-27-2005 | 170.24 |
| PS | Optimus Prime | 10-30-2005 | 35.00 |
| PS | Megatron | 05-27-2005 | 35.00 |

1. Bosco is functionally dependent on Windows and visa versa, so it’s functionally dependent because if we know it’s either of these packages or systems then we can determine the install date and software cost of the software package on the system.
2. This data table isn’t in the third normal form because the InstallDate and SoftwareCost columns are both still a part of the table despite them not being dependent on the key which violates the third normal form rules.

**Part 3 - 3NF**

| **PackageID** |
| --- |
| AC01 |
| DB32 |
| DB33 |
| WP08 |
| WP09 |

| **TagNumber** |
| --- |
| 32808 |
| 37691 |
| 57772 |
| 57222 |
| 59836 |
| 77740 |

| **InstallDate** |
| --- |
| 09-13-2005 |
| 12-03-2005 |
| 06-15-2005 |
| 05-27-2005 |
| 01-12-2006 |
| 10-30-2005 |

| **SoftwareCost** |
| --- |
| 754.95 |
| 380.00 |
| 412.77 |
| 185.00 |
| 227.50 |
| 170.24 |
| 35.00 |

1. The primary key is AC01 in the PackageID table, the primary key is 77740 in the TagNumber table, the primary key is 10-30-2005 in the Install Date table, and the primary key is 412.77 in the SoftwareCost table
2. Package DB33 is functionally dependent on TagNumber 57772, so is WP08 and 57222, also WP09 and 77740 and visa versa, so it’s functionally dependent because if we know it’s either of these packages or systems then we can determine the install date and software cost of the software package on the system.
3. These tables are in third normal form because all of the data that isn’t dependent on the key has been eliminated.
4. E/R Diagram