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Data Management HW

The data you have now is sufficient, but we can make it better. With what you have shown me it seems like you have a collection of data, without any context attached to it. Data is useless without any context behind it because it is meaningless information. It is my job as your data consultant to turn your data into content and make it information. We will do this be organizing your data and putting it in 3rd normal form in order to develop strong entities, and well organized tables, allowing us to have a well-structured database.

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

The primary key is the composite of the two attributes package id and tag number. The reason why this is the primary key because you need the package id and the tag number combined in order to for the data to be unique. **PK: (TagNumber, PackageId)**

TagNumber	PackageID	InstallDate	SoftwareCostUSD	PackageName	ComputerModel
32808	AC01	09-13-2005	754.95	OSX	Dell
32808	DB32	12-03-2005	380.00	MS Office	Dell
37691	DB32	06-15-2005	380.00	MS Office	HP
57772	DB33	05-27-2005	412.77	Zork	Toshiba
32808	WP08	01-12-2006	185.00	Postgress	Apple
37691	WP08	06-15-2005	227.50	Postgress	HP
57222	WP08	05-27-2005	170.24	Postgress	Lenovo
59836	WP09	10-30-2005	35.00	Adobe	Samsung
77740	WP09	05-27-2005	35.00	Adobe	Asus

PackageID → PackageName,
TagNumber → ComputerModel,
(TagNumber, PackageID) → SoftwareCostUSD,
(TagNumber, PackageID) → InstallDate

The new table is not in third normal form because, all of the data is located in one table. Some of the attributes that are in that one table should be separated into different tables, and those tables will have specific attributes that best fit the entity. The table does not comply with the rules of second normal form, meaning that the there are non-prime attributes. If you look at the functional dependencies you can see that the Package Name depends on package id, it does not depend on the pk (TagNumber and PackageId)

ComputerModels

TagNumber	ComputerModel
32808	Dell
37691	HP
57772	Toshiba
57222	Lenovo
59863	Samsung
77740	Asus

PK: TagNumber

FD: TagNumber → Computer Model

PackageNames

PackageID	PackageName
AC01	OSX
DB32	MS Office
DB33	Zork
WP08	Postgress
WP09	Adobe

PK: PackageID

Functional Dependency: PackageID → PackageName

PackageInfo

TagNumber	PackageID	InstallDate	SoftwareCostUSD
32808	AC01	09-13-2005	754.95
32808	DB32	12-03-2005	380.00
37691	DB32	06-15-2005	380.00

57772	DB33	05-27-2005	412.77
32808	WP08	01-12-2006	185.00
37691	WP08	06-15-2005	227.50
57222	WP08	05-27-2005	170.24
59836	WP09	10-30-2005	35.00
77740	WP09	05-27-2005	35.00

Primary key: (TagNumber, PackageID)

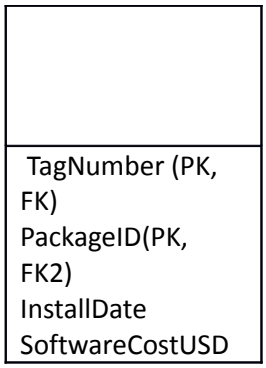
Foreign keys: TagNumber, PackageID

Functional Dependencies: (TagNumber, PackageID) → InstallDate
(TagNumber, PackageID) → SoftwareCostUSD

The above tables are in 3rd normal form for a number of reasons. The tables follow the requirements of first normal form- which states that all rows and columns must be atomic, all must be executed or nothing will be executed. Every attribute must contain only a single value from a specific domain. For the tables to be in second normal form each non prime attribute is dependent on the whole key. Finally for our tables to comply with 3rd normal form which is required for any database every non prime attribute is non transitively dependent on the key.

ER Diagram.

PackageNames
PackageID (PK) PackageName
PackageInfo
TagNumber (PK, FK) PackageID(PK, FK2) InstallDate SoftwareCostUSD
ComputerModels
TagNumber (PK) ComputerModel


TagNumber (PK, FK)
PackageID(PK, FK2)
InstallDate
SoftwareCostUSD