

## Normalization 1

## Part One:

1. Since he is the CEO of the company and he just signed my consulting agreement I would tell him it looks great. Although it looks like some of the package Id's rows have two or even three different software installations in them these would have to be broken down later on to be accessed easier.
2. To convert this to first normal form 1NF would be as follows like I mentioned in question 1

Pack ID	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. The primary key for this table is a combination of Pack ID and TagNum This seems to be the shortest combination of attributes to make each row unique.

## Part Two:

4. Here is the table with the two additional columns

Pack ID	TagNum	InstallDate	SoftwareCost	SPN	Model
AC01	32808	09-13-1995	754.95	Zork	HP
DB32	32808	12-03-1995	380.00	Portal	Apple
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		

- Functional dependencies in this table are Pack ID → Tag Num however this doesn't work the other way around because different pack id's can have the same tag num. install date also seems to sometimes determine the software cost but not the other way around. SPN and model are prime and aren't dependent on anything.
- This is not in third normal form because "The key, the whole key, and nothing but the key so help me Codd." This table violates third normal form because install date and software cost are not dependent on the super key of this table they are dependent on non-key fields.

Part Three:

- I would break this down into three different tables. Computers which would have a primary key of CID and have the TagNum and Model attributes. Software which would have a primary key of SID and have the pack id and sid attributes. Lastly an Installs table which would take the SID and CID keys from the other tables and have the install date and software cost making up its primary key.
- In computers CID → Tag → model. Software SID → packID → SPN. Installs CID+SID → date → cost.
- These tables are in third normal form because they all are dependent on primary key fields there are no attributes that are dependent on non-key fields.

