

Zachary Miller  
Lab 7  
Due Wednesday April 6th, 2016

### Normalization Part 1:

1.) Tycho CEO Fred Johnson has put together a spreadsheet of all the data he has so far, of which he collected him self.

a.) As I look over the spreadsheet of the data he has collected so far, I notice it is not in a very good organization order for a database. I tell him that it is a great start, but will be needed some work to improve it.

b.)Put his data in 1NF and display it. (Show the table not SQL):

	<b>installid</b> character(3)	<b>packageid</b> text	<b>tagnumber</b> text	<b>installdate</b> text	<b>softwarecostusd</b> numeric(10,2)	
1	001	AC01	32808	09-13-2005	754.95	
2	002	DB32	32808	12-03-2005	380.00	
3	003	DB32	37691	06-15-2005	380.00	
4	004	DB33	57772	05-27-2005	412.77	
5	005	WP08	32808	01-12-2006	185.00	
6	006	WP08	37691	06-15-2005	227.50	
7	007	WP08	57222	05-27-2005	170.24	
8	008	WP09	59536	10-30-2005	35.00	
9	009	WP09	77740	05-27-2005	35.00	

c.) The primary key would be installID. installID would describe each installation, this would be an additional column put into the database.

2.) Add Two columns of new data: One column for software package name (e.g. Zork, Portal, etc.) and one for computer model (e.g. IBM, Apple, etc.). Be sure that your new data is consistent with the original data. Do not add any additional columns.

a.) Display New Table:

	installid character(3)	packageid text	packagename text	tagnumber text	modelname text	installdate text	softwarecostusd numeric(10,2)
1	001	AC01	ACCESS	32808	IBM	09-13-2005	754.95
2	002	DB32	ZORK	32808	IBM	12-03-2005	380.00
3	003	DB32	ZORK	37691	APPLE	06-15-2005	380.00
4	004	DB33	ORACLE	57772	IBM	05-27-2005	412.77
5	005	WP08	WORD PROCESSOR	32808	APPLE	01-12-2006	185.00
6	006	WP08	WORD PROCESSOR	37691	APPLE	06-15-2005	227.50
7	007	WP08	WORD PROCESSOR	57222	APPLE	05-27-2005	170.24
8	008	WP09	MICROSOFT WORD	59536	IBM	10-30-2005	35.00
9	009	WP09	MICROSOFT WORD	77740	IBM	05-27-2005	35.00

b.) Identify and document all functional dependencies:

packageID determines PackageName

packageID determines SoftwareCostUSD

tagNumber determines modelName

installID determines installDate

c.) Explain why this new table is not in third normal form:

This new table is not in 3rd normal form because there are multiple keys that determine each record.

3.) Decompose your 1NF table into a set of tables that are in at least third normal form. (BCNF would be better). Remember that it's wrong to add artificial keys to associative entities. Actually, as I said before, do not add any additional columns.

a.) Identify all primary keys for all tables

packageTable: packageID

tagTable: tagNumber

installTable: installID

b.) Identify all functional dependencies for all tables

package ID determines packageName

tagNumber determines modelName

installID determines all other records

c.) Explain why the new tables are in third normal form

With each table having only 1 key that determines each record, it is now in 3rd normal form.

d.) Draw a beautiful E/R diagram