

# Fundamentals of Relational Database Systems

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## Homework 2

You have been hired as a database consultant by BRH Global Enterprises. They need to track what software packages are installed on their computers. Each computer is identified by an asset tag number. Each software package has a package id. They would also like to track the install date of each package on each computer as well as the cost of that piece of software for that machine. The CEO, Mr. Miles Meservy, has put together a spreadsheet of all the data he has so far, which he personally collected.

### Software

PackID	TagNum	InstallDate	SoftwareCost
AC01	32808	09-13-1995	754.95
DB32	32808	12-03-1995	380.00
	37691	06-15-1995	380.00
DB33	57772	05-27-1995	412.77
WP08	32808	01-12-1996	185.00
	37691	06-15-1995	227.50
	57222	05-27-1995	170.24
WP09	59836	10-30-1995	35.00
	77740	05-27-1995	35.00

#### Question 1

[2 points]

As he shows you the spreadsheet, having just signed your consulting agreement, he asks what you think of it. How do you reply?

#### Question 2

[8 points]

- Put this data (as is) in a 1NF table and display it. (Show me the table, don't write the SQL.)
- What is the primary key?

Now add columns for software package name (Great Plains Accounting, Oracle Server, Tetris, Zork, etc.) and computer model (Dell, IBM, Commodore, Atari, etc.) only. Show the new table. (Be sure that all the new data is consistent with all of the original data.) **Do not add any additional columns.**

#### Question 3

[15 points]

- Identify and document all the functional dependencies
- Show why this new table is not in third normal form.

#### Question 4

[25 points]

Decompose your 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.) Identify all primary keys (determinants) and all functional dependencies for each table. Show the new tables and draw an ER diagram.