Database Systems

CMPT 308 · Fall 2013

Normalization #1 - 50 points

Goals	To begin delving into the art and science of normalization.
Scenario	You have been hired as a database consultant by Kramerica Enterprises. They wish to track the software packages 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 installation date of each package on each computer, as well as the cost of that software for that computer at install time.

Initial Data

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

Deliverables

Part One: Kramerica CEO Miles Meservy has put together a spreadsheet of all the data he has so far, which he personally collected.

☐ As he shows you the spreadsheet, having just signed your consulting agreement, he asks what you think of it. How do you reply?   [2 points]

☐ Put his data in 1NF and display it. (Show me the table; no SQL.)   [3 points]

☐ What is the primary key?   [5 points]

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

☐ Display the new table.   [2 points]

☐ Identify and document all the functional dependencies.   [5 points]

☐ Explain why this new table is **not** in third normal form.   [3 points]

Part Three: 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.

☐ Identify all primary keys (determinants) for all tables.   [10 points]

☐ Identify all functional dependencies for all tables.   [7 points]

☐ Explain why the new tables are in third normal form.   [3 points]

☐ Draw a beautiful E/R diagram.   [10 points]

Submitting

Submit your work as a PDF. (Only PDF files will be accepted.) Push it to your GitHub repository **before** the class in which it is due. Remember to include your name and date. Neatness counts.