Part One: Tycho
CEO Fred Johnson has put together a spreadsheet of all the data he has so far, which he personally collected.

1.

We need three tables instead of just one. The first one will keep track of all of the data for the individual computers, while another one will store the different packages. Lastly there will be a table to join the first two to show which computers have which packages.

2.

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

3.

The union of PackageID and TagNumber.

Part Two : 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.

4.

PackageID	TagNumber	InstallDate	SoftwareCostUSD	PackageName	ComputerModel
AC01	32808	09-13-2005	754.95	Apacie	Lenovo

DB32	32808	12-03-2005	380.00	DigiBam V32	Lenovo
DB32	37691	06-15-2005	380.00	DigiBam V32	Lenovo
DB33	57772	05-27-2005	412.77	DigiBam V33	Dell
WP08	32808	01-12-2005	185.00	WordPress V8	Lenovo
WP08	37691	06-15-2005	227.50	WordPress V8	Lenovo
WP08	57222	05-27-2005	170.24	WordPress V8	Dell
WP09	59836	10-30-2005	35.00	WordPress V9	Dell
WP09	77740	05-27-2005	35.00	WordPress V9	Apple

5.
PackageID -> PackageName
TagNumber -> ComputerModel
PackageID, TagNumber -> InstallDate, SoftwareCostUSD
6.
Because it is not in second normal form. It is not in second normal form because
PackageID -> PackageName and TagNumber -> Computer model. These two are not
primary keys on their own so should not have any dependants.
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 artiEicial keys to
associative entities. Actually, as I said before, do not add any additional columns.
7.
PackageID will be the primary key for the software table. TagNumber will be the
primary key for the computers table. Lastly PackageID, and TagNumber will be a
composite primary key for the InstalledSoftware table.

8.
PackageID -> PackageName

TagNumber -> ComputerModel

PackageID, TagNumber -> InstallDate, SoftwareCostUSD

9.

The tables are in third normal form because they are in first normal form, second normal form and every non-prime attribute of R is non-transitively dependent on every key of R. Since all values are atomic it follows first normal form. It is in second normal form because every attribute is dependant on only the entirety of the candidate keys of every table. Lastly it is in third normal form because Every attribute is directly dependant on every key of its table.

10.

Software	InstalledSoftware	Computers
PackageID, PackageName	TagNumber, PackageID, InstallDate, SoftwareCostUSD	TagNumber, ComputerModel