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DB Systems Lab 7  
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## Part One

1. As a spreadsheet, the data looks fairly well organized. Some additional things might make the sheet more readable for anyone not familiar with the information, such as the software packages names. The information also needs to be normalized and given a primary key.

2. Defining data items:

PackID	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 is a composite key consisting of PackID and TagNum.  
(PackID, TagNum).

## Part Two

- 4.

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

5. PackID -> PackName (PackName is functionally dependent on PackID).  
TagNum -> TagModel (TagModel is functionally dependent on TagNum).

PackID, TagNum -> InstallDate and SoftwareCost (Both InstallDate and SoftwareCost are determined by the composite key of both PackID and TagNum).

6. This new table is not in third normal form because it breaks the second normal form law: that there are partial dependencies. PackName is dependent on PackID and TagModel is dependent on TagNum, and both PackName and TagModel don't really link to what Software Package was ordered. Thus, due to the extra information, the information should be broken into multiple tables.

### Part Three

7. Software package table – primary key: PackID  
 Computer Model table – primary key: TagNum  
 Order table - primary key: composite key of (PackID, TagNum)

8. Software package table – PackID -> PackName  
 Computer Model table – TagNum -> TagModel  
 Order table - (PackID, TagNum) -> InstallDate, SoftwareCost

9. The new tables are in third normal form because it is in second normal form, where there are no partial dependencies of columns on primary keys, and that all nonprimary fields are dependent on their primary key.

10.

(prim key)

PackID	PackName
AC01	Zork
DB32	Portal
DB33	Rudix
WP08	Steam
WP09	Homebrew

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PackID	TagNum	InstallDate	Software Cost
AC01	32808	09-13-1995	754.95
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WP09	59836	10-30-1995	35.00
WP09	77740	05-27-1995	35.00

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TagNum	TagModel
32808	HP
37691	Apple
57772	Apple
57222	HP
59836	Apple
77740	HP