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Professor Lab

Normalization 1

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### Part One

A) I believe that you have done a decent job on the spreadsheet, Mr. Meservy. Though there is no way to get to a precise data, as the current spreadsheet isn't organized correctly. This kind of organization can increase redundancy.

B)

PackageID	TagNumber	InstallDate	SoftwareCostUSD
AC01	32808	9/13/2005	754.95
DB32	32808	12/3/2005	380.00
DB32	37691	6/15/2005	380.00
DB33	57772	5/27/2005	412.77
WP08	32808	1/12/2006	185.00
WP08	37691	6/15/2005	227.50
WP08	57222	5/27/2005	170.24
WP09	59836	10/30/2005	35.00
WP09	77740	5/27/2005	35.00

C) The primary key of the database is actually a composite key of both PackageID and TagNumber.

### Part Two

PackageID	TagNumber	InstallDate	SoftwareCostUSD	Software Package Name	Computer Model
AC01	32808	9/13/2005	754.95	Photoshop	HP
DB32	32808	12/3/2005	380.00	Zork	HP
DB32	37691	6/15/2005	380.00	Zork	Apple
DB33	57772	5/27/2005	412.77	Zork	HP
WP08	32808	1/12/2006	185.00	Office	HP
WP08	37691	6/15/2005	227.50	Office	Apple
WP08	57222	5/27/2005	170.24	Office	HP
WP09	59836	10/30/2005	35.00	Dia	HP
WP09	77740	5/27/2005	35.00	Dia	Apple

B) For the functional dependencies of the table, they are as follows:

TagNumber → ComputerModel

PackageID → SoftwarePackageName

PackageID, InstallDate → SoftwareCostUSD

C) The new table is not in third normal form because it contains multiple key dependencies. This means that some of the attributes do not depend on the key completely. The table will have to be broken up into three tables to be in 3NF.

### Part Three

#### Packages

PackageID	Software Package Name
AC01	Photoshop
DB32	Zork
DB32	Zork
DB33	Zork
WP08	Office
WP08	Office
WP08	Office
WP09	Dia
WP09	Dia

#### Computers

TagNumber	Computer Model
32808	HP
37691	Apple
57222	HP
57772	HP
59836	HP
77740	Apple

#### Installs

PackageID	TagNumber	InstallDate	SoftwareCostUSD
AC01	32808	9/13/2005	754.95
DB32	32808	12/3/2005	380.00
DB32	37691	6/15/2005	380.00
DB33	57772	5/27/2005	412.77
WP08	32808	1/12/2006	185.00
WP08	37691	6/15/2005	227.50
WP08	57222	5/27/2005	170.24
WP09	59836	10/30/2005	35.00
WP09	77740	5/27/2005	35.00

A) The primary keys are as follows:

1. PackageID for Packages
2. TagNumber for Computers
3. The composite key of the PackageID and the TagNumber for Installs

B) For the functional dependencies of the table, they are as follows:

Computers: TagNumber  $\rightarrow$  ComputerModel

Installs: PackageID, InstallDate  $\rightarrow$  SoftwareCostUSD

Packages: PackageID  $\rightarrow$  SoftwarePackageName

C) This is 3NF because everything is broken down to the smallest level. None of the attributes are transitively dependent on the primary key any longer, they are all functionally dependent. All the data values are atomic, there is no repeating grouping, and each has a correct primary key.

D)

