Lab 7: Normalization one

Part One:
1. I would say the CEO has a good idea what he wants in the database. However, his column names could be improved, such as the price column, where it should have a unit (e.g. USD, Dollars, etc.) Lastly, and most importantly, he needs to include a primary key to the database, as it does not currently have one.

2.

PackID	TagNum	InstallDate	SoftwareCostUSD
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	59386	10-30-1995	35.00
WP09	77740	05-27-1995	35.00

3. The primary key could be the composite of the PackID and the TagNum in this case, as the two of them combined can be a unique set. Any other composite key would result in a non-unique set.

Part Two:
4.

PackID	TagNum	InstallDate	SoftwareCostUSD	PackName	CompModel
AC01	32808	09-13-1995	754.95	Final Cut Pro v.10	Apple
DB32	32808	12-03-1995	380.00	Photoshop CC	Apple
DB32	37691	06-15-1995	380.00	Photoshop CC	Lenovo
DB33	57772	05-27-1995	412.77	GarageBand	Asus
WP08	32808	01-12-1996	185.00	Microsoft Office	Apple
WP08	37691	06-15-1995	227.50	Microsoft Office	Lenovo
WP08	57222	05-27-1995	170.24	Microsoft Office	Dell
WP09	59386	10-30-1995	35.00	Civilization V	Alienware
WP09	77740	05-27-1995	35.00	Civilization V	HP

5. Both SoftwareCostUSD and PackName depend on PackID, and CompModel depends on TagNum. SoftwareCostUSD also depends on the CompModel, and TagNum depends on Pack ID.

6. Third Normal Form states that the entity should be in second normal form and all attributes of the table are dependent on the primary key. Since this database shows that everything does not depend on one thing and one thing only, this is not in third normal form.

Part Three:
   7.
Computer Models

TagNum	CompModel
32808	Apple
32808	Apple
37691	Lenovo
57772	Asus
32808	Apple
37691	Lenovo
57222	Dell
59386	Alienware
77740	HP

TagNum would be the primary key for the "Computer Models" table.

Packages

PackID	InstallDate	PackName
AC01	09-13-1995	Final Cut Pro v.10
DB32	12-03-1995	Photoshop CC
DB32	06-15-1995	Photoshop CC
DB33	05-27-1995	GarageBand
WP08	01-12-1996	Microsoft Office
WP08	06-15-1995	Microsoft Office
WP08	05-27-1995	Microsoft Office
WP09	10-30-1995	Civilization V
WP09	05-27-1995	Civilization V

For the "packages" table, the primary key would be the PackID.

Cost

PackID	TagNum	SoftwareCostUSD
AC01	32808	754.95
DB32	32808	380.00
DB32	37691	380.00
DB33	57772	412.77
WP08	32808	185.00
WP08	37691	227.50
WP08	57222	170.24
WP09	59386	35.00
WP09	77740	35.00

Primary key is the composite of PackID and TagNum.

8. PackID → PackName
   TagNum → CompModel
   PackID, TagNum → InstallDate, SoftwareCostUSD

9. They are in third normal form because all of their columns other than the primary key depend on the whole primary key and nothing but the primary key. Also, there are no multiple key dependencies for any of the tables.

10.

ER Diagram

Computer Models	
PK, FK	TagNum
	CompModel

Packages	
PK, FK	PackID
	InstallDate
	PackName

Cost	
PK, FK	PackID
PK, FK	TagNum
	InstallDate
	SofwareCostUSD