

Part 1

Question 1

I would reply by saying that his table has data and it is put into an order. I like the fact that the Software Cost column specifies that the money is in USD, which is helpful. However, the data in the table is not normalized. This will definitely create anomaly problems such as insert, update and delete anomalies. Because of the anomalies we will have to change more than 1 rows just to change one part of the data. The anomalies will have a side effect on the data and we might lose data that we wish stayed. There doesn't seem to be a primary or composite key either. The table is also missing some data and feels almost incomplete. We need to normalize the data.

Question 2

PackageID (PK)	TagNumber (PK)	InstallDate	SoftwareCostUSD
AC01	32808	09-13-2005	754.95
DB32	32808	12-03-2005	380.00
DB32	27691	06-15-2005	380.00
DB33	57772	05-27-2005	412.77
WP08	32808	01-12-2006	185.00
WP308	37691	06-15-2005	227.50
WP308	57222	05-27-2005	170.24
WP09	59836	10-3-2005	35.00
WP09	77740	05-27-2005	35.00

Question 3

I decided to make the PackageID and TagNumber as a composite primary key because PackageID or TagNumber by themselves are not unique enough. Together they make strong composite primary key.

Part 2

Question 4

PackageID (PK)	TagNumber (PK)	InstallDate	SoftwareCost USD	SoftwarePackage Name	ComputerM odel
AC01	32808	09-13-2005	754.95	Zork	Dell
DB32	32808	12-03-2005	380.00	Portal	Apple
DB32	27691	06-15-2005	380.00	Portal	Apple
DB33	57772	05-27-2005	412.77	Guitar Hero	IBM
WP08	32808	01-12-2006	185.00	Half life 2	Dell
WP308	37691	06-15-2005	227.50	Portal	Lenovo
WP308	57222	05-27-2005	170.24	Zork	IBM
WP09	59836	10-3-2005	35.00	Zork	Apple
WP09	77740	05-27-2005	35.00	Half life 2	Dell

Question 5

Functional Dependencies:

PackageID, TagNumber → InstallDate, SoftwareCostUSD, SoftwarePackageName,
ComputerModel

PackageID → TagNumber

TagNumber → PackageID

Question 6

3rd Normal Form: A table is in 3NF **if and only if** it is in 2NF **AND** there are no multi-key dependencies. No multiple dependencies. This new table is not in 3NF because we have partial dependencies. We have more than 1 functional dependencies in this table for the same column. There are also transitive dependencies. To turn this table into 3NF, we will have to turn the data into smaller tables.

Question 7

Data in 3NF:

Package Table
PackageID (PK)
TagNumber (PK)
SoftwareName
ComputerModel

Tag Table
TagNumber(PK)
InstallDate

Software Table
SoftwareName (PK)
SoftwareCost

Primary keys (determinants): PackageID from Package Table, TagNumber from Tag Table, and SoftwareName from Software Table.

Question 8: Functional Dependencies

PackageID, TagNumber → SoftwareName, ComputerModel

TagNumber → InstallDate

SoftwareName → SoftwareCost

Question 9

It is now in 3NF because it has achieved first and second Normal Form Rules which state that intersection of all rows and columns is atomic, and there are no partial key dependencies. There are also no transitive dependencies (it is actually now in BCNF which is a step ahead of third normal form rule).

Question 10: ER Diagram

