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Database Management

Normalization Assignment 1

Part 1

1. The spreadsheet includes a lot of useful information but I feel as though some of it is a little redundant and could be organized in a clearer manner that would allow for many types of viewers with varying experience and knowledge to be able to understand the data more easily.

2.

PackageID	TagNumber	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	59836	10-30-1995	35.00
WP09	77740	05-27-1995	35.00

3. The primary key in this situation would be a composite key of the PackageID and the TagNumber as the two of these combined will uniquely identify an entity occurrence since PackageIDs and TagNumbers can be used more than once.

Part 2

4.

PackageID	TagNumber	InstallDate	SoftwareCost USD	SoftwarePackageName	ComputerModel
AC01	32808	09-13-1995	754.95	Zork	HP
DB32	32808	12-03-1995	380.00	Mabinogi	HP
DB32	37691	06-15-1995	380.00	Mabinogi	Apple
DB33	57772	05-27-1995	412.77	Sims3	HP
WP08	32808	01-12-1996	185.00	Portal	HP
WP08	37691	06-15-1995	227.50	Portal	DELL
WP08	57222	05-27-1995	170.24	PerfectWorld	Apple
WP09	59836	10-30-1995	35.00	Minecraft	Apple
WP09	77740	05-27-1995	35.00	Minecraft	DELL

5. Functional Dependencies

- PackageID to SoftwarePackageName
- TagNumber to ComputerModel
- PackageID and TagNumber to InstallDate and SoftwareCostUSD

6. This table is not in third normal form because some of the keys do not depend on both of the primary keys that make up the composite key. The columns that have this error are ComputerModel only depending on TagNumber and SoftwarePackageName only depending on PackageID. For a table to be in third normal form, there can be no partial key dependencies.

Part 3

7. To decompose the table from 1NF to 3NF I will create three new tables that will be called Computer, Software, and Installation. The primary key of the Computer table will be TagNumber. The primary key of the Software table will be PackageID. The primary key of the Installation table will be the composite key of TagNumber and PackageID.

8. Functional Dependencies

- Computer Table: TagNumber to ComputerModel
- Software Table: PackageID to SoftwarePackageName
- Installation Table: TagNumber and PackageID to InstallDate and SoftwareCostUSD

9. The new tables are in third normal form because all elements in the individual tables are dependent on that table's primary key and there are no multiple key dependencies inside the tables.

10.

Installations	
PK, FK1 PK, FK2	PackageID TagNumber
	SoftwareCostUSD InstallDate

Computer	
PK	TagNumber
	ComputerModel

Software	
PK	PackageID
	SoftwarePackageName