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Lab7: Normalization One

Part One:

1. Mr. Johnson, excellent work! Very impressive; you are a true renaissance
   man! Internal monolog: This spreadsheet is not in first normal form because
   it violates first normal form rule: each intersection of rows and columns is
   not atomic.

2. First Normal Form

	packageid character(4)	tagnumber integer	installdate date	softwarecostusd numeric(10,2)
1	AC01	32808	2005-09-13	754.95
2	DB32	32808	2005-12-03	380.00
3	DB32	37691	2005-06-15	380.00
4	DB33	57772	2005-05-27	412.77
5	WP08	32808	2006-01-12	185.00
6	WP08	37691	2005-06-15	227.50
7	WP08	57222	2005-05-27	170.24
8	WP09	59836	2005-10-30	35.00
9	WP09	77740	2005-05-27	35.00

3. PackageID does not uniquely identify a row entity and TagNumber does not
   uniquely identify a row entity but PackageID and TagNumber together do.
   Therefore the primary key is a composite key consisting of PackageID and
   TagNumber, which uniquely identify every row entity in the table.

Part Two:
4. One Table to Rule them all…not final product

	packageid character(4)	tagnumber integer	installdate date	softwarecostusd numeric(10,2)	software text	computermodel text
1	AC01	32808	2005-09-13	754.95	Safari	Apple
2	DB32	32808	2005-12-03	380.00	MySQLServer	Apple
3	DB32	37691	2005-06-15	380.00	MySQLServer	Lenovo
4	DB33	57772	2005-05-27	412.77	Tycho Special	ASUS
5	WP08	32808	2006-01-12	185.00	Spark	Apple
6	WP08	37691	2005-06-15	227.50	Spark	Lenovo
7	WP08	57222	2005-05-27	170.24	Spark	Acer
8	WP09	59836	2005-10-30	35.00	Minecraft	Raspberry Pi Zero
9	WP09	77740	2005-05-27	35.00	Minecraft	HP

Weak Associative Entity Table: Service Tracker Table

	packageid character(4)	tagnumber integer	installdate date	softwarecostusd numeric(10,2)
1	AC01	32808	2005-09-13	754.95
2	DB32	32808	2005-12-03	380.00
3	DB32	37691	2005-06-15	380.00
4	DB33	57772	2005-05-27	412.77
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6	WP08	37691	2005-06-15	227.50
7	WP08	57222	2005-05-27	170.24
8	WP09	59836	2005-10-30	35.00
9	WP09	77740	2005-05-27	35.00

Strong Associative Entity Tables: Software Table and Computer Table

	packageid character(4)	software text
1	AC01	Safari
2	DB32	MySQLServer
3	DB33	Tycho Special
4	WP08	Spark
5	WP09	Minecraft

	tagnumber integer	computermodel text
1	32808	Apple
2	37691	Lenovo
3	57772	ASUS
4	57222	Acer
5	59836	Raspberry Pi Zero
6	77740	HP

5. Functional Dependencies include: PackageID and TagNumber functionally determine Install Date, Software Cost(USD). PackageID functionally determines Software and TagNumber functionally determines Computer Model.

6. This new table is not in third normal form because there are exist multiple key dependencies within the table.

Part Three:

7. In the Service Tracker table the primary key is a composite key composed of PackageID and TagNumber. In the Software table the primary key is the PackageID and in the Computer table the primary key is the TagNumber.

8. Functional Dependencies for each table are: Service Tracker table: PackageID and TagNumber functionally determine InstallDate and SoftwareCost (USD). Software table: PackageID functionally determines Software. Computer table: TagNumber functionally determines ComputerModel.

9. The new tables are in third normal form because they are all in first normal form that is every intersection of rows and columns is atomic, they are all in second normal form because all non primary key columns in every table depend on the entire primary key. These tables achieve Third Normal Form because in every table there are no multiple key dependencies that is every non primary key column in the table depends directly on the entire primary key.

10.

Service Tracker Table		
PackageID, TagNumber	**Install Date**	**Software Cost USD**
AC01, 32808	2005-09-13	754.95
DB32, 32808	2005-12-03	380.00
DB32, 37691	2005-06-15	380.00
DB33, 57772	2005-05-27	412.77
WP08, 32808	2006-01-12	185.00
WP08, 37691	2005-06-15	227.50
WP08, 57222	2005-05-27	170.24
WP09, 59836	2005-10-30	35.00
WP09, 77740	2005-05-27	35.00

Software	
PackageID	**Software**
AC01	Safari
DB32	MySQLServer
DB33	Tycho Special
WP08	Spark
WP09	Minecraft

Computer	
TagNumber	**Computer Model**
32808	Apple
37691	Lenovo
57772	ASUS
57222	Acer
59836	Raspberry Pi Zero
77740	HP