Joining Tables – the mechanics

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Related Columns

- Two columns, each from a different table, can be **related** if the values in one of the column represent the same things in real life as the values in the other

Related Columns

Phone Vendors	
vendor	Phone
Radio Shack	SideKick
Best Buy	iPhone

Store Locations	
store	location
Best Buy	360 Newbury St.
Newbury Comics	332 Newbury St.

- In this example, the vendor column of the Phone Vendors table and the store column of the Store Locations table both represent the name of a store, and so they can be *related*.

Table Joins

- Joining tables is an operation that produces a new table.

- The technical name for the operation explained in these slides is "equi-join" but we will refer to it simply as "join"

Steps for Joining Tables

1. For every possible combination, take a row from the first table and a row from the second table

2. Remove all the rows that do not have equal values in the related columns

3. Merge the related columns into one column.

Joining:
Step 1 – all combinations

Phone Vendors	
vendor	Phone
Radio Shack	SideKick
Best Buy	iPhone

Store Locations	
store	location
Best Buy	360 Newbury St.
Newbury Comics	332 Newbury St.

Phone Vendors X Store Locations – step 1			
vendor	Phone	store	location
Radio Shack	SideKick	Best Buy	360 Newbury St.
Radio Shack	SideKick	Newbury Comics	332 Newbury St.
Best Buy	iPhone	Best Buy	360 Newbury St.
Best Buy	iPhone	Newbury Comics	332 Newbury St.

Joining:
Step 2 – remove rows with unequal values in related columns

Phone Vendors	
vendor	Phone
Radio Shack	SideKick
Best Buy	iPhone

Store Locations	
store	location
Best Buy	360 Newbury St.
Newbury Comics	332 Newbury St.

Phone Vendors X Store Locations – step 2			
vendor	Phone	store	location
~~Radio Shack~~	~~SideKick~~	~~Best Buy~~	~~360 Newbury St.~~
~~Radio Shack~~	~~SideKick~~	~~Newbury Comics~~	~~332 Newbury St.~~
Best Buy	iPhone	Best Buy	360 Newbury St.
~~Best Buy~~	~~IPhone~~	~~Newbury Comics~~	~~332 Newbury St.~~

Joining:
Step 3 – merge related columns

Phone Vendors	
vendor	Phone
Radio Shack	SideKick
Best Buy	iPhone

Store Locations	
store	location
Best Buy	360 Newbury St.
Newbury Comics	332 Newbury St.

Phone Vendors X Store Locations – step 3			
vendor	Phone	store	location
~~Radio Shack~~	~~SideKick~~	~~Best Buy~~	~~360 Newbury St.~~
~~Radio Shack~~	~~SideKick~~	~~Newbury Comics~~	~~332 Newbury St.~~
Best Buy	iPhone	Best Buy	360 Newbury St.
~~Best Buy~~	~~IPhone~~	~~Newbury Comics~~	~~332 Newbury St.~~

Joining:
cleaned up

Phone Vendors	
vendor	Phone
Radio Shack	SideKick
Best Buy	IPhone

Store Locations	
store	location
Best Buy	360 Newbury St.
Newbury Comics	332 Newbury St.

Phone Vendors X Store Locations		
vendor	Phone	location
Best Buy	IPhone	360 Newbury St.

How many rows in result table?

- How many rows will be in the result table?
- In the previous example, there were fewer rows in the result table than in either of the tables that were joined together.
- However, this a result table might have *more* rows than the original tables.

Joining: Example 2

Phone Vendors	
vendor	Phone
Best Buy	SideKick
Best Buy	iPhone

Store Locations	
store	location
Best Buy	360 Newbury St.
Best Buy	401 Park Dr.
Best Buy	14 Allstate Rd.

Phone Vendors X Store Locations		
vendor	Phone	location
Best Buy	SideKick	360 Newbury St.
Best Buy	SideKick	401 Park Dr.
Best Buy	SideKick	14 Allstate Rd.
Best Buy	iPhone	360 Newbury St.
Best Buy	iPhone	401 Park Dr.
Best Buy	iPhone	14 Allstate Rd.

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