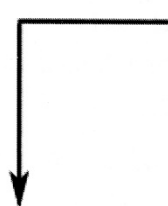Exercise 2 - Lab 3b: Explore tables and attributes

Lab 3b Join and relate tables – exercise 2

Join the customer sales summary table to the store locations attributes to update the stores data.

In this exercise, you will:

✓ Determine table cardinality.

✓ Discover table relationships through common attributes.

✓ Calculate and display attribute values based on a relationship.

After relating the tables, selecting a feature in the stores table selects the corresponding features in the related customer sales

Store_ID	Employees	Store_Sales
1	14	684270.8631
2	18	522882.5635
3	16	474500.4352
4	15	193137.3807

STOREID	ADDRESS	CITY	STATE	ZIP	SALES
1	5300 FORT MASON DR	AUSTIN	TX	7330	188.6632
1	3009 IRA YOUNG DR APT 701	TEMPLE	TX	7650	37.268
1	509 ARAPAHO DR	TEMPLE	TX	7650	140.9166
1	307 CARTER ST	KILLEEN	TX	7654	18.1379
1	1305 CAROL WAY	KILLEEN	TX	7654	76.2058
1	1003 MARY JANE CT	KILLEEN	TX	7654	97.3687

Step 1: Determine cardinality between tables

Often, you have one or more tables that can be related based on common attribute values. In this step, you will determine the relationship, or cardinality, between the Store_Locations and the Store_Sales tables.

a. Restore ArcMap.

If you did not finish the previous exercise, or you want to start with the finished results, open the.. \GEOG270 - Advanced Topics in GIS\Lab 3\Lab 3 Exercise Data\3b_Tables\Results\Stores.mxd and add the Streets basemap (click the down arrow next to the Add Data button and choose Add Basemap).

b. In the Stores map document, open the Store_Saies table and the Store_Locations attribute table.

c. Examine the store ID values in both tables:
- the STOREID field in the Store_Sales table
- the Store_ID field in the Store_Locations table

1. How many records in the Store_Sales table match each record in the Store_Locations table?

2. What is the cardinality between the Store_Sales and Store_Locations tables?

d. Close the Table window.

Step 2: Join two tables

In this step, you will join the two tables together, combining attributes from both tables into a single table view.

a. Right-click the Store_Locations layer, point to Joins and Relates, and choose Join..., the Join Data dialog box opens.

b. Complete the Join Data dialog box to match the following graphic.

What do you want to join to this layer?

Join attributes from a table

1. Choose the field in this layer that the join will be based on:

   Store_ID

2. Choose the table to join to this layer, or load the table from disk:

   Store_Sales

   ☑ Show the attribute tables of layers in this list

3. Choose the field in the table to base the join on:

   STOREID

You have specified that you want to join these two tables together using the Store_ID values in the Store_Locations layer and the STOREID values in the Store_Sales table.

c. Click OK.

d. Open the Store_Locations attribute table.

e. Scroll to the far right in the table.

Notice the new joined attributes from the summary table. You have joined two tables together based on common attribute values.

The joined attributes look as though they are part of the Store_Locations attribute table. However, they are only combined together visually in this table view. If any of the values change in the joined table (Store_Sales), you would see the new values in the Store_Locations attribute table.

f. Close the Table window.

g. Turn off the Customers layer.

h. With the Identify tool, click one of your Store_Locations points on the map.

Notice that the joined attribute values are listed in the Identify window. By joining the two tables, you can easily find the total sales for a selected store.

i. Close the Identify window.

Step 3: Calculate values from the joined table

In this step, you will populate the empty Store_Sa!es field that you added to the locations table in the previous exercise.

a. Open the attribute table for the Store_Locations layer.

Notice that the Store_Sales attribute contains <Null>, or empty, values. You will use the Field Calculator to populate this field with the joined sales values.

b. Right-click the Store_Sales field heading and choose Field Calculator.

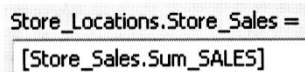A warning appears, which indicates that your calculations will be permanent.

c. Click Yes to continue.

You can use the Field Calculator to populate values in a variety of ways. You can enter formulas to calculate numeric values, or you can copy values from one field to another.

In the Fields section, notice that the name of each field is prefixed with the table name. This can help you identify which fields are native to the table, and which are from a join.

The large empty space at the bottom of the dialog box is where you can enter your expression to calculate values. In this case, you want to copy the joined sales values from your summary table, so you will just enter the name of the field that contains these values.

d. In the Fields list, scroll to the bottom and double-click Store_Sales.Sum_SALES.

```
Store_Locations.Store_Sales =
[Store_Sales.Sum_SALES]
```

The field name is added to the expression area of the Field Calculator.

Above the expression area, you see the attribute that will receive these values. This is the Store_Sales attribute that you right-clicked to open the Field Calculator.

e. Click OK to execute the expression.

The Store_Sales attribute now contains the values from the joined Sum_SALES field.

Now that the sales values are a native attribute in the Store_Locations table, you will remove the join.

f. Right-click the Store_Locations layer, point to Joins and Relates > Remove Join, and then choose Store_Sales.

Notice that the joined fields are removed from the table. Close the Table window.

Step 4: Relate tables

In this step, you will create a relationship between two tables using a relate.

a. Turn on the Customers layer.

3. What is the cardinality between a store and its customers?

b. Right-click the Store_Locations layer, point to Joins and Relates, and choose Relate.

c. Read the description at the top of the Relate dialog box.

d. Complete the dialog box to match the following graphic.

1. Choose the field in this layer that the relate will be based on:

Store_ID ▼

2. Choose the table or layer to relate to this layer, or load from disk:

◈ Customers ▼ 📂

3. Choose the field in the related table or layer to base the relate on:

STOREID ▼

4. Choose a name for the relate:

Store to Customers

> Give your relate a descriptive name so you can easily identify it later. A recommended naming convention is to include both table names. This technique is especially useful if you have several relates.

e. Click OK.

Step 5: Explore the relate

In this step, you will explore the relate.

a. Open the Store_Locations attribute table.

Notice that the fields from the Customers attribute table were NOT added to the Store_Locations table. With a relate, the two tables are kept separate. However, you can use tools to see related features.

b. Click the row button next to Westgate Shopping Ctr to select the row.

Shopping Center	Street	City	State	Zip
▶ Westgate Shopping Ctr	4477 S Lamar Blvd	Austin	TX	78745
La Frontera Village	120 sundance Parkway	Round Rock	TX	78681
Wolf Ranch	I-35 and SR 29	Georgetown	TX	78627
Barton Creek Square Mall	10515 N Mo PAC Expy	Austin	TX	78759

The previous graphic does not show all the fields in the table.

Next, you will navigate the relationship to see all the customers associated with this store.

c. At the top of the Table window, click the Related Tables button.

The option listed is the name of your relate (Store to Customers) and the related table *(Customers).*

d. Click Store to Customers: Customers.

The Customers table opens with records selected that have a store ID value that matches your selected store location. (The corresponding features are also selected in the map.)

4. How many customer records are in the selection?

Hint: Look at the bottom of the Customers table.

You can navigate relates in both directions. You could have also selected a customer record and navigated to the related Store_Location.

e. Close the Table window.

f. On the Tools toolbar, click the Clear Selected Features button.

g. Use the Identify tool to click a customer point in your map.

h. At the top of the identify window, expand the identified record, which is shown as a street address.
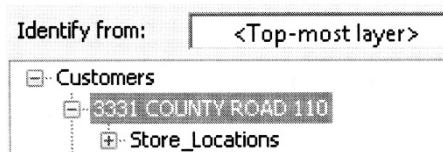
Your identified location may be different than this example.

The related table is listed.

i. Expand Store_Locations to see the name of the shopping center where the store is located.
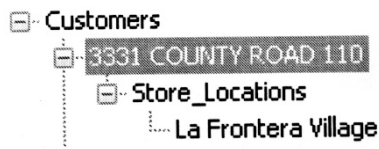
j. Click the name of the shopping center to see the location flash in your map.

k. Close the Identify window.

Step 5: Change the display expression

In this step, you will change the field that displays in your related table. Currently, when you navigate the relationship from the Customers table to the Store_Locations table, the Shopping Center attribute is displayed. You will change this to display the City value.

a. Open the Layer Properties for the Store_Locations layer. Click the Display tab.

b. Under Display Expression, for Field, choose City.

c. Click OK.

e. Identify another customer location and navigate the relationship.

The City value for your point may be different than this example.

Now the city name is displayed for the related Store_Locations record.

f. Close the Identify window.

g. Save your map and close ArcMap.