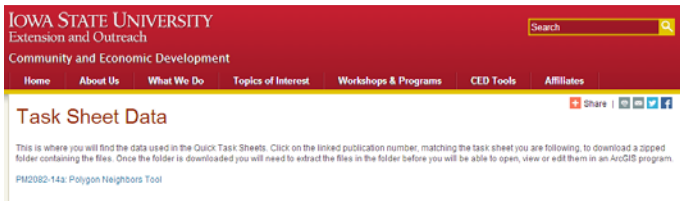
ArcGIS 10.2, 10.3

The Generate Near Table Tool

Welcome to the Essential ArcGIS Task Sheet Series. This series supplements the Iowa State University GIS Geospatial Technology Training Program short course series, "Essential ArcGIS Tutorial Series." The task sheets are designed to provide quick, easy instructions for performing specific tasks in GIS.

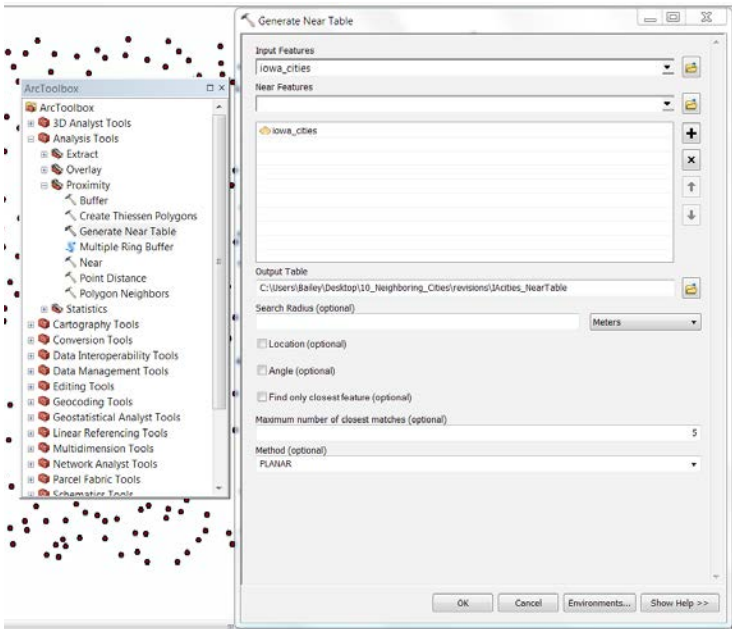
The Generate Near Table tool generates a table of nearest features, based on input features and near features, and provides a distance and rank for each near feature. The input features can be points, multi-points, lines, or polygons. This task sheet will demonstrate how to use this tool by creating a table of the cities in Iowa and their 5 nearest neighbors. In order to do this, a point shapefile of Iowa cities will be used as both the input features and the near features. The following methods can be used to find near features for any point, line, or polygon shapefile.

1. Download the Data



a. To download the data used in this task sheet, navigate to www.extension.iastate.edu/communities/gis/quicktasksheets/data in a web browser. Click on the publication number **PM2082-15t**.

2. Generate Near Table Tool



a. Add the **iowa_cities** shapefile, downloaded in **step1a**, to ArcMap or use a different point shapefile.

b. Open the **Generate Near Table** tool, located in the **ArcToolbox** under **Analysis Tools** > **Proximity**.

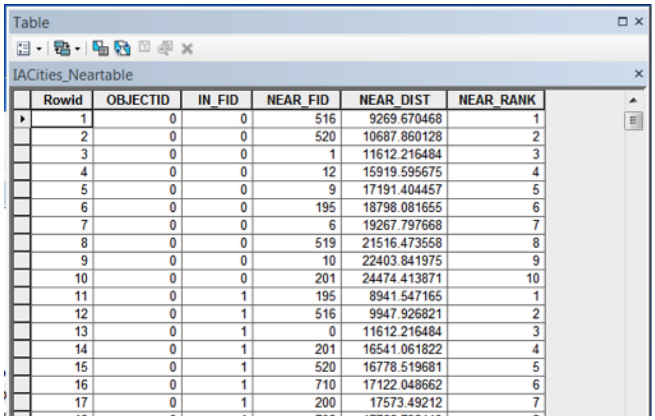
c. In the **Generate Near Table** tool dialog box choose **iowa_cities** for both the **Input Features** and the **Near Features**.

d. In the **Output Table** field, select an appropriate location for the resulting table and name it **IAcities_nearTable**. Then uncheck the **Find only closest feature** option. *Hint: you could choose this option if you want to find only the nearest feature.*

e. Under **Maximum number of closest matches** enter **5**. This will result in a table showing the 5 closest cities to each city in Iowa.

f. Click **OK** to run the tool and generate the near table.

3. Near Table



Table

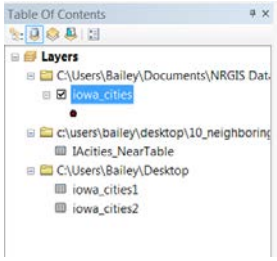
IACities_Neartable

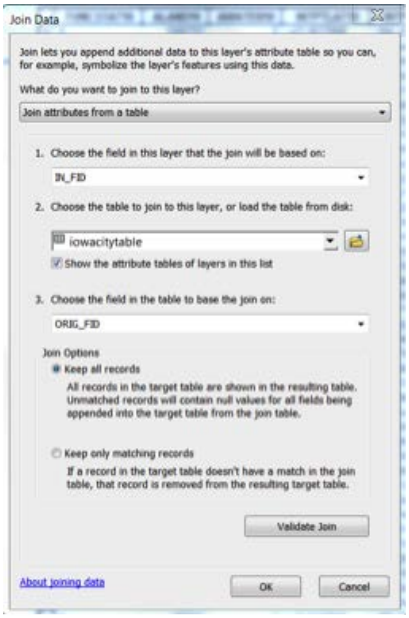
Rowid	OBJECTID	IN_FID	NEAR_FID	NEAR_DIST	NEAR_RANK
1	0	0	516	9269.670468	1
2	0	0	520	10687.860128	2
3	0	0	1	11612.216484	3
4	0	0	12	15919.595675	4
5	0	0	9	17191.404457	5
6	0	0	195	18798.081655	6
7	0	0	6	19267.797668	7
8	0	0	519	21516.473558	8
9	0	0	10	22403.841975	9
10	0	0	201	24474.413871	10
11	0	1	195	8941.547165	1
12	0	1	516	9947.926821	2
13	0	1	0	11612.216484	3
14	0	1	201	16541.061822	4
15	0	1	520	16778.519681	5
16	0	1	710	17122.048662	6
17	0	1	200	17573.49212	7

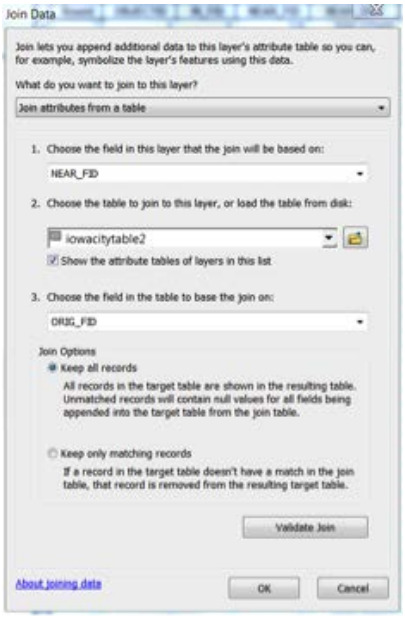
a. In ArcMap, open the table generated by the Generate Near Table tool. Notice that each feature is identified by

the **IN_FID** (input) field, and the 5 nearest neighbors are identified by the **NEAR_FID** (near) field. *Note: this table may not be very useful until the name of the features are included in the table.*

b. In order to add the city names to the table generated in **step2**, you must complete two table joins to the **IAcities_nearTable**. The first join will be based on the input features, and the second join will be based on the near features. To do this in ArcMap, you must create a copy the **iowa_cities** table for each join. Directions for this are below.







4. Table Joins

a. Open the attribute table for the **iowa_cities** layer. Under **Table Options**, choose **Export** to export the data from this table to a new table named **iowa_cities1.dbf** and add it to the map.

b. Repeat **step 4a** again so that there are two copies of the **iowa_cities** table, this time name the second table **iowa_cities2.dbf**.

c. Right-click on **IAcities_nearTable** in the table of contents, and select **Join**. Select the **IN_FID** field to be joined with the **ORIG_FID** field from the **Iowa_cities1** table.

d. Click **OK**. Now **IAcities_nearTable** has the names of the input cities. Next, you will do another table join so that the near cities have names.

e. Right-click on **IAcities_nearTable**, in the table of contents, and select **Join**. In **Join Data** dialog box, select the **NEAR_FID** field to be the join with the **ORIG_FID** from the **iowa_cities2** table.

f. Open **IAcities_nearTable**. Now there should be five entries for each city, each with a field that identifies the city and it's neighboring cities. *Hint: make sure to export the table so the join becomes permanent. You can also export the table to be used in other programs, such as Excel.*

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