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.

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1. Download the Data

 To download the data used in this task sheet, navigate to <u>www.extension.iastate.edu/communities/gis/</u> <u>quicktasksheets/data</u> 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

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



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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 lowa 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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Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the US Department of Agriculture. Cathann Kress, director, Cooperative Extension Service, Iowa State University of Science and Technology, Ames, Iowa.

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