

Digital Map Customization

Using GIS software, maps containing different types of information can be produced. Many professionals use GIS projects to conduct analysis, find answers on important questions and report their findings in the form of maps, tables, charts, etc.

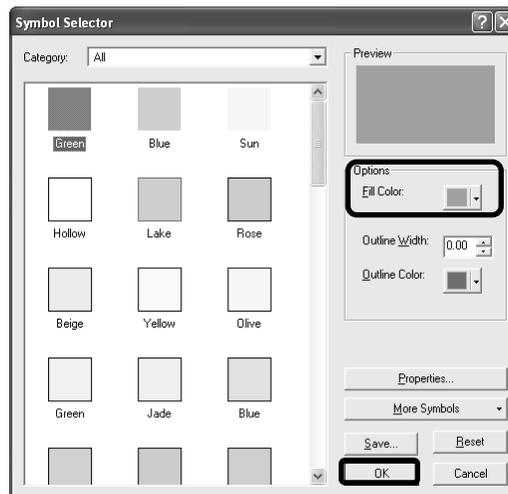
Explorer's Guide

Before You Start

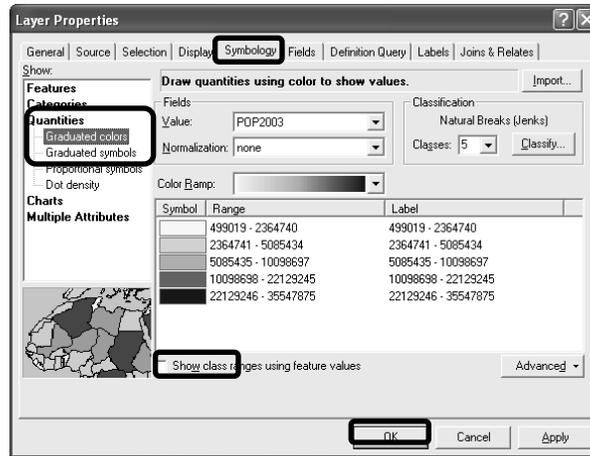
Using a map of the USA provided, identify the number of data layers needed to recreate this map in the electronic form. Which data layers represent vectors (point, line, or polygon) and raster data? Which attributes have been shown in the maps (e.g., range of population, political status, elevation, etc.)?

Learning by Doing

1. Start ArcGIS software and open *USA* project in *4H-GIS* folder. First, change the color of *Parks* layer to green. To do this, click on the box to turn on the parks layer. Click the parks symbol to activate symbol selector as shown below. Choose green color for the Fill Color box. Click *OK*.



2. Modify symbology used to mark the *Interstate* layer (it is very similar to the *Lakes* layer and can be confusing. Click the symbol and change the *width* of the lines to 2 in the symbol selector).
3. Modify the *State* layer so that every state would be represented by a different layer. Right click the *States layer* and activate *Symbology* tab in *Layer properties* window, as shown below. Choose *graduated colors* under *Quantities*. Click on the value drop down menu and choose *POP2003* to identify states with the same population in 2003.. Select an appropriate color scheme from the *color ramp*. Click *Apply* and click *OK*.



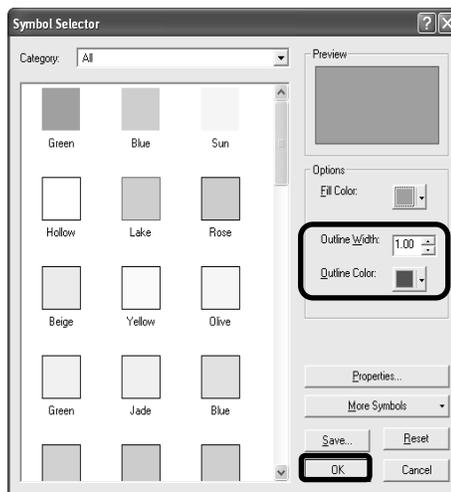
- Find the largest park in the USA? Right click the *Parks* layer to open the corresponding *attribute table*. Every attribute table contains records (rows) and fields (columns). Right click the *SQMI* field and click *Sort descending*. The attribute data and spatial data of each feature are linked together in a GIS. Therefore the record moved to the top corresponds to the largest park in the USA.

Largest park in USA is _____

- Using the same procedure as above, find five largest Lakes in the USA from the *Major Lakes* layer? Use sort descending for the *Area* field and report the first 5 records from the attribute table

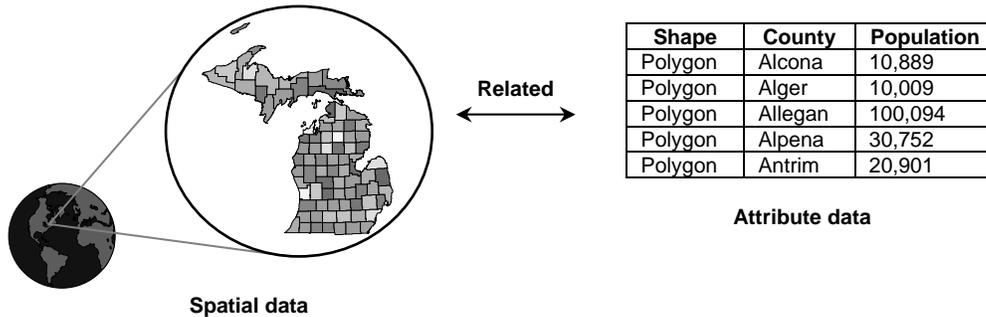
Largest lakes in the USA: 1. _____
 2. _____
 3. _____
 4. _____
 5. _____

- Change the outline color of all the lakes using the following symbol selector.



How Does It Work

In GIS project spatial as well as attribute data are linked together. **Spatial data** describes the location and shape of geographic objects and their spatial relationships to other objects, when **Attribute data** provides information about these objects. Attribute table contains rows, called records, and columns, called fields, corresponding to different information related to the features associated with the table.



The links between features and their attributes make it possible to analyze geographic data according to the properties of features involved. For example, we can identify US cities with populations over 1 million, state capitals, and state capitals with populations over 1 million. It is also possible to investigate the spatial relationships among features. For instance, locate cities that are within 10 kilometers from major rivers, or identify states that have a common boarder with Nebraska.

Additional Challenge

Further customize the *USA* project to explore different options to modify visualization and analyze data layers available. Turn layers on and off to avoid too much of information displayed at the same time. Use zoom and pan options to narrow your target area.

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