# Creating Geographic Data

Sometimes a project may require you to generate data from scratch. You can create blank geographic data using ArcCatalog, and then edit the data using ArcMap. **Shapefiles** and **rasters** are basic formats, but **file geodatabase feature classes** provide additional speed and functionality.
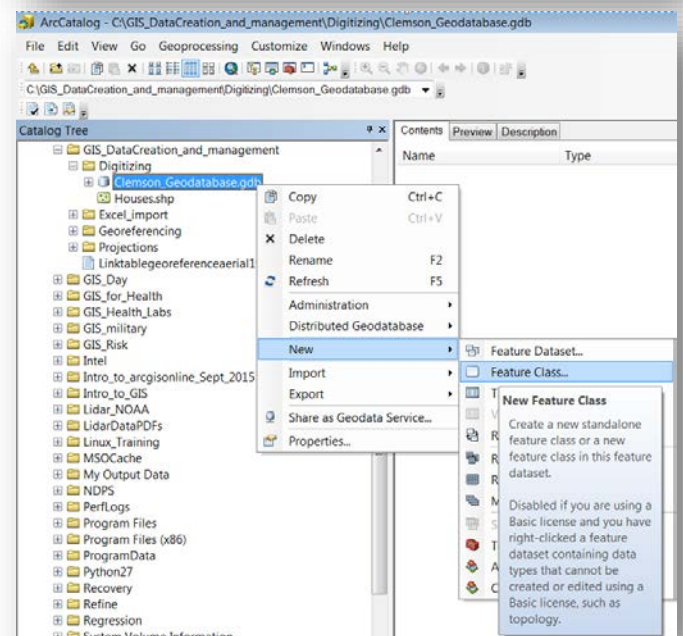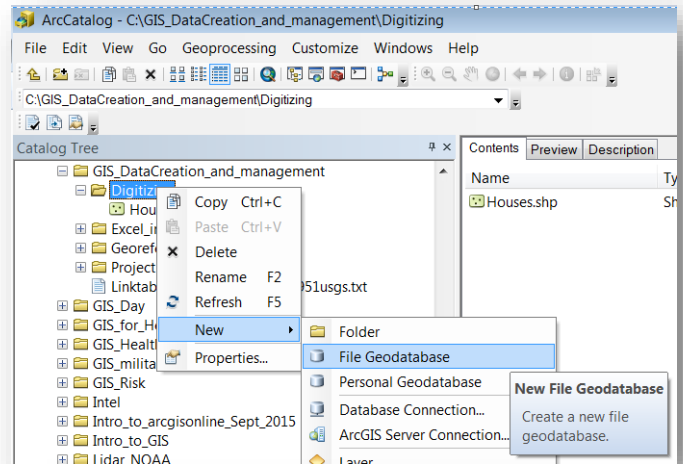
Shapefiles

- Open ArcCatalog, or open the catalog window in ArcMap

- Right click on the folder in which you want to create your new data set: Digitizing

- Move your mouse over and select **New** and click **Shapefile**

- A dialog box will appear. Give your new file a name and geometry type. Choose **Point** for this exercise, and call the file **Houses.**

- Click **Edit** to choose an appropriate coordinate system. In this case, Projected Coordinate Systems>State Plane>NAD 1983 (2011) (Meters)>NAD 1983 StatePlane South Carolina III FIPS 3900.
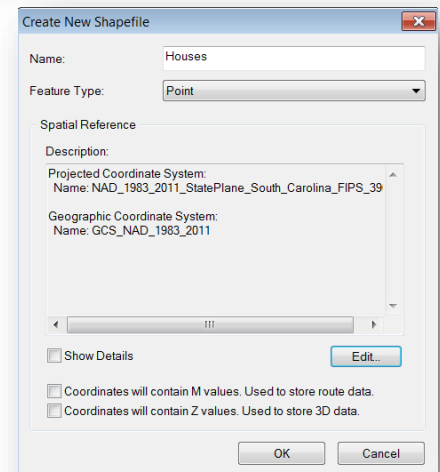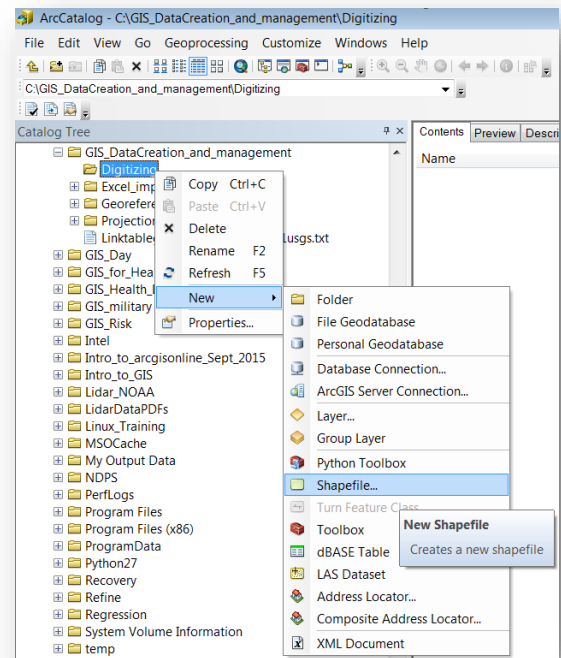
File Geodatabase Feature Classes

- Open ArcCatalog, or open the catalog window in ArcMap

- Right click on the same folder you used above: Digitizing

- Move your mouse over **New** and click **File Geodatabase.** Call this geodatabase **Clemson_Geodatabase**

- Right click on this geodatabase and move your mouse over **New** and click **Feature Class**

- In the new dialog box, enter "**Roads**" in the Name field and choose **Line Features** as the feature type. Click **Next**

- In the next screen, choose the same coordinate system as above: NAD 1983 State Plane South Carolina FIPS 3900. Click **Next** and continue accepting defaults and clicking **Next** until you are able to click **Finish**.

- Repeat this process and create a **polygon** feature class called "**River**"

Editing Your Data

Now that you have created blank shapefiles and feature classes, it is time to populate them with data. We will do this using the **Editor** in ArcMap. Open **ArcMap** and add the map you georeferenced in the previous exercise: SC_Clemson_260869_1951_24000_georef.tiff.

- First we will edit our point shapefile. We will create points for the houses on the Clemson area in 1951 (don't worry - you don't need to do *all* the households)

- Add the **Houses** shapefile you created to the data frame.

- Zoom into the Clemson campus in the old topo map.

- Click the **Editor** button to open the editor toolbar
  In the editor toolbar, click **Editor**. In the dropdown
  Menu, click **Start Editing.**

- A new frame will appear on the right side of the screen.

- At the top of this frame you will see a point symbol and the
  name of your data: **Houses**. Click on it.
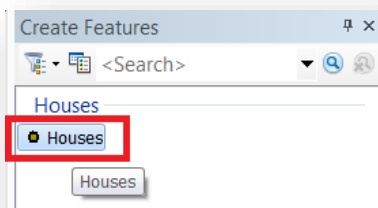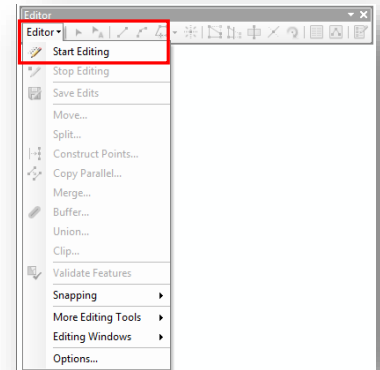
- Your mouse will now show a point next to it – when you click anywhere in your data frame, a
  new point (house location) will be added.

- Begin adding points on the houses on campus. Keep going until you get too bored or tired…
  Don't do more than 10 houses for now.

- Before we save these changes, let's edit the attributes. Open the attribute table by right
  clicking on **houses** in the table of contents

- In the field called **ID**, click in one of the individual cells that currently reads "0." Enter a new
  number in each row of the ID field, then close the attribute table.

- Click **Editor** again and click **Stop Editing**. When asked to save
  your edits, click **Yes.** Your shapefile now has both geographic and
  tabular information

- Now we will edit the feature classes you created in the file geodatabase. Drag both **Roads** and **River** from ArcCatalog into ArcMap.

- Click **Editor** – **Start Editing**. In the dialog box, select either Roads or River. Because they are in the same geodatabase, the icon for both will turn a pale blue with a pencil over it. This indicates that these features will be editable. Click **OK**

- In the frame that appears on the right, both feature classes will appear. Select **Roads** at the top and **Line** at the bottom.

- Click at the Southwest corner of the campus close to the stadium. When you move your mouse, a line follows the vertex you just created.

- **Double click to finish the line**.

- You could add additional lines now, but we will move on to the river polygon. Click on **River** at the top of the frame on the right, and **Polygon** at the bottom.

- Trace the river along the Clemson campus area. Double-click to finish your polygon..

- Click **Editor**, **Stop Editing**, and **Save** your edits. Now your feature classes have geographic data as well, and all three pieces of data – point, line, polygon – are now available for display and analysis in your map document.

Congratulations, you are a **tiger** of a data creator!