

Creating and Editing Shapefiles in ArcGIS

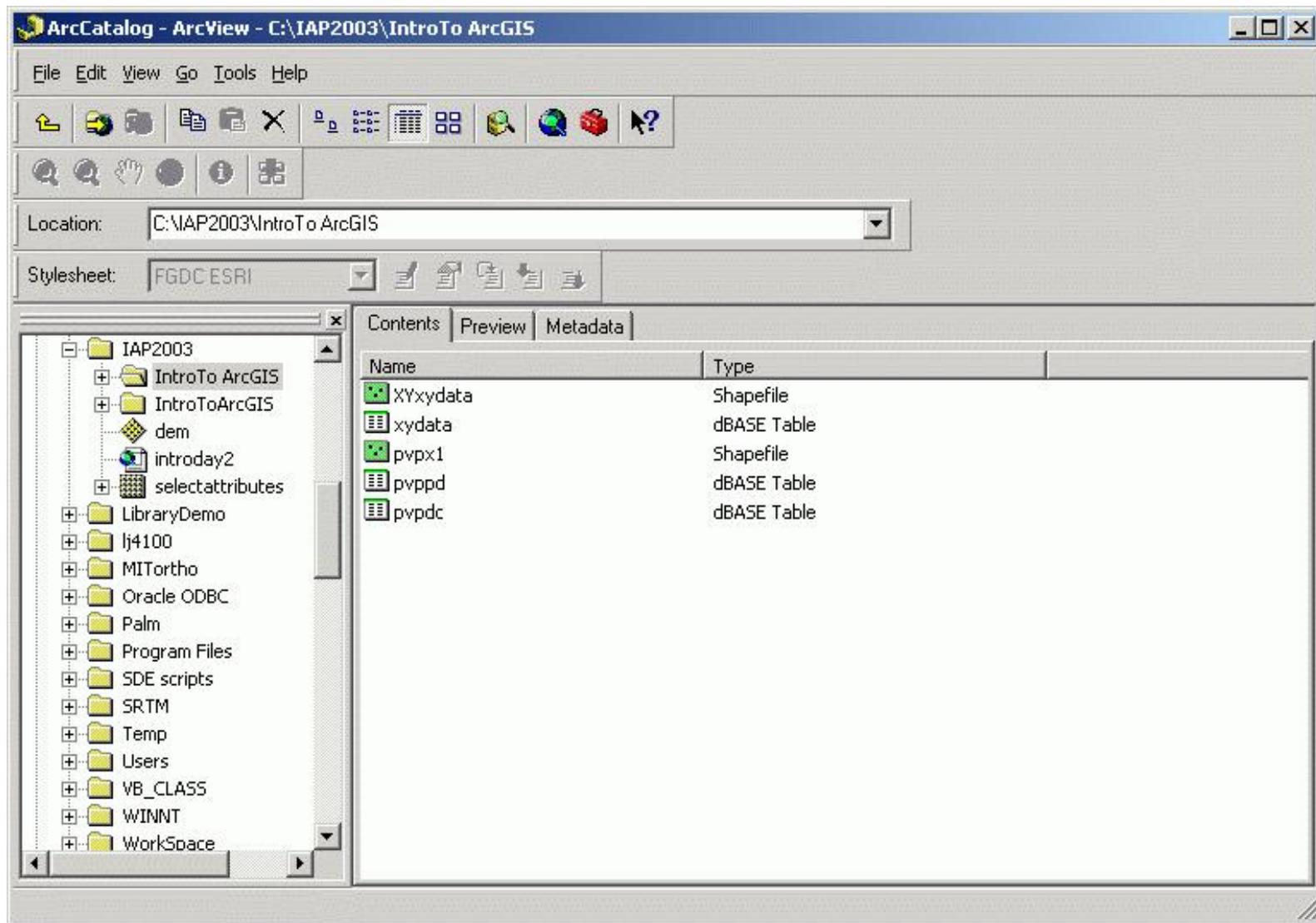
Introduction

This is an introduction to ArcCatalog and a how-to for screen digitizing and editing of layer features. Creating layers is part of ArcCatalog while editing layers is part of ArcMAP. You will create new shapefiles based on air photos of campus.

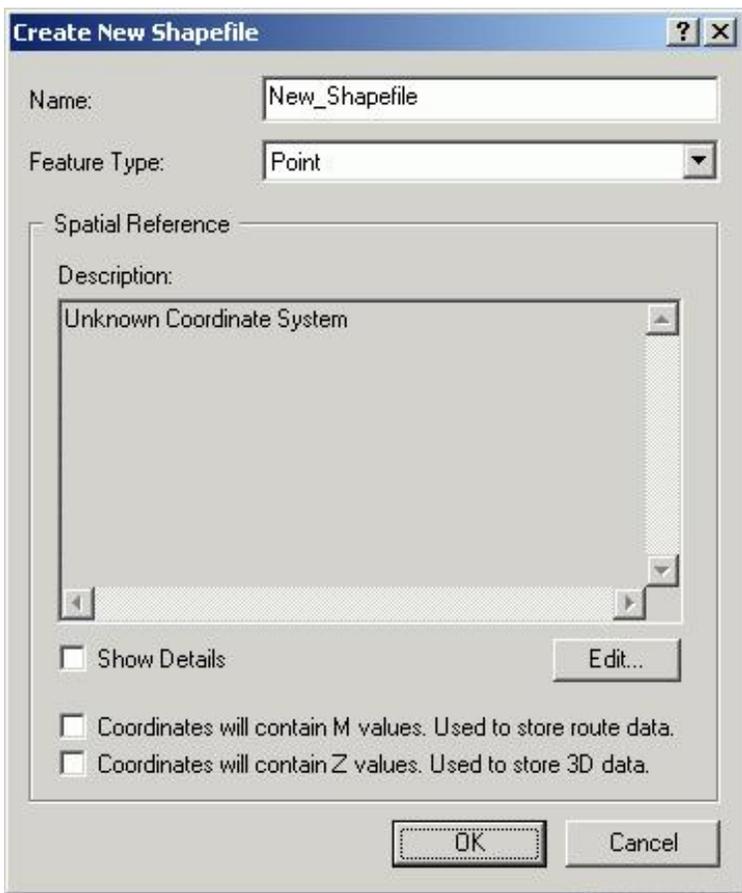
You should have a new ArcMAP window open with no layers added.

Creating Layers in ArcCatalog

Open ArcCatalog from ArcMAP by clicking on the tools menu then ArcCatalog. You should see this screen:



Navigate to the directory that you want to store the file. Use the connect to folder button if you need to. Create a new shapefile by clicking on the File menu then clicking on New then clicking on Shapefile. If you don't have write permission in the directory that you have opened, you won't see any options under NEW. On clicking on Shapefile, you should see this dialog:



You should change the name to **paths** and the feature type to **polyline** and then click on OK. You now have a new shapefile. Repeat this process for a point shapefile called **places**.

You can add attributes by right clicking on the name of the shapefile in ArcCatalog and then clicking on Properties then clicking on the Fields tab in the dialog. Simply add fields and types in the dialog:



Add a field to each shapefile: "name" which should be a string (Data Type = "text"). Leave the Length at 50.

Click on these files and drag them over to the ArcMAP window. You are ready to start editing them.

Add the **camb.tif** image to your layer (from the T:\Lab2data directory). This is an aerial photograph of part of Cambridge including campus. You will be digitizing off of this. You digitize lines around campus. Try to digitize the streets around campus - Mass Ave, Vassar St, and Main St. Also digitize points - the entrance to your building, where you eat lunch, etc.

Editing Points in ArcMAP

Start the Editing process by adding the Editor toolbar. You can find this by clicking on Tools then on Editor Toolbar. This is what the toolbar looks like:



On the Editor Toolbar, clicking on Start Editing. If there were layers from more than one folder, you would have to select the folder that

contained the data that you want to edit. You should now see the current task (Create a new feature) and the Target (the current layer that you are editing). Change the Target to **places** if it is not already set. Now create a new feature. Click on the PENCIL button, which is the drawing tool. You can now create new points by clicking on the map. If you open the Feature Attribute Table (by right clicking on **places** in the table of contents and then clicking on Open Attribute Table), you can edit the attributes. The most recently added point is highlighted in blue. This point is selected. You can select other points on the map and then they would be highlighted in blue.

Add at least four points to your **places** shapefile, and add a name for each in the attributes. You can use the zoom in and out tools, and the pan tool to move around the map and increase the accuracy of your point placement.

Moving points - you can move points by changing the task to Reshape Feature. Change to the pointing tool (black arrow-head) on the Editor Toolbar and clicking the point you wish to move. Keep the left mouse button depressed and move the point.

Deleting points - with the pointing tool of the Editor toolbar, click on a point to select it and then hit the DELETE key. It's not gone forever: use the EDIT undo function.

Stop editing - click on Editor then click on Stop Editing. You will be prompted to save your edits.

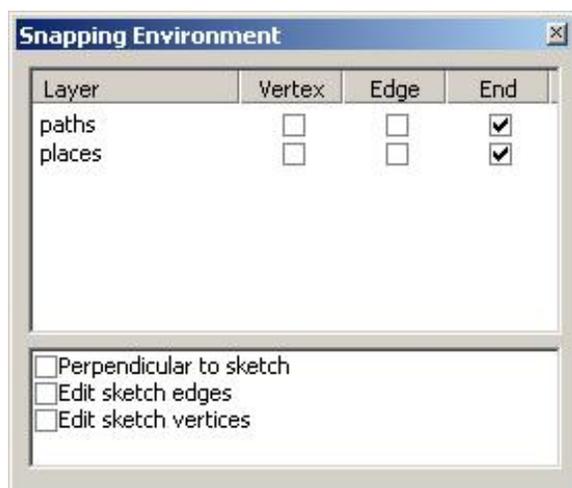
Save your edits frequently!

Change the symbology of your **places** layer to something more visible than the default, such as a large red dot.

Editing Linework in ArcMAP

Start editing as you did for points and make **paths** the target.

There are options that need to be set for line editing. First, click the Editor menu then click on Snapping. This dialog appears:



Snapping is autocompleting a line so that it ends at a firm point, rather than very, very close to a firm point. Rather than having your line cross another line, leaving a dangling line on the other side, you might want to have the second line end on the first, either on the line or at the end of the line. You can set these as parameters in the Snapping Dialog. Set this to **Edge** for **paths**. You can also set lines to snap on other layers, including point layers.

Next, open the options dialog. Click on the Editor menu then click on Options. This dialog appears:



The Snapping Tolerance (under the General tab) is the distance that you need to get before a line is actually snapped to another line (or other feature). The distance that you set is determined by experience. Start with 10 meters (not pixels!). Click on OK to complete. Note - you may have to go back and edit your Data Frame Properties (View Menu) to set the map units and display units to meters, if you have not done so already.

Try the following:

- Create a new feature (Mass Ave from the bridge to Albany Street). When you are finished, right click and then click on Finish Sketch, or simply double-click the last point.
- Create a second feature which snaps to the first feature (Vassar St from Main St, ending at Mass Ave)
- Modify a feature (use the split tool - look for this on the Editor Toolbar) (cut Mass Ave beyond Vassar St)
- Reshape a feature (select Mass Ave and delete vertices. Click on the line at a vertex. Right click and the click Delete Vertex. Click anywhere to see the line without the vertex)

Remember to SAVE your edits periodically.

When you have finished this section, click the link below to go to Part 2 of the lab.