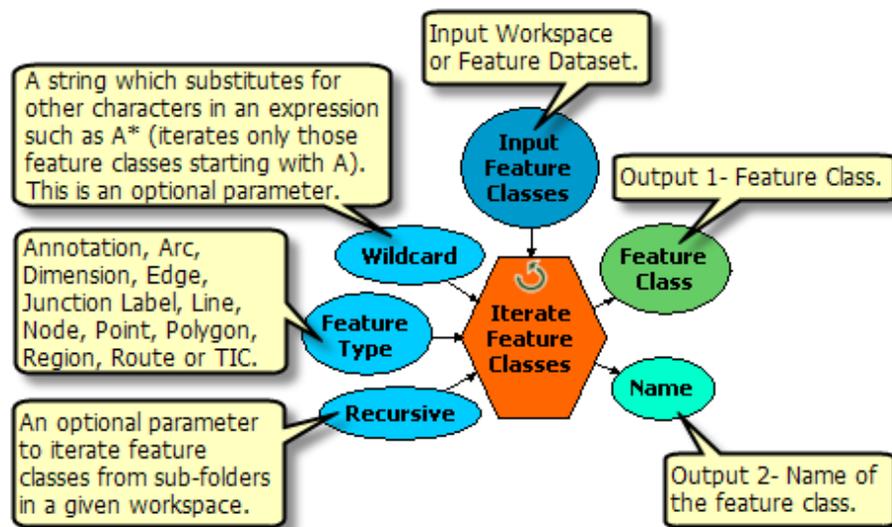


Cookbook 11 December 2013 *ModelBuilder (Part 2)*

Overview

1. A *Batch Model With Parameters*



ModelBuilder is great, especially when using iterators and can save you hours of tedious work with a relatively small time investment up front. The more you use ModelBuilder, the easier it will be to create models efficiently.

Here are two great tutorials:

<http://maps.library.utoronto.ca/docs/ModelBuilder.pdf>

<http://gis.mtu.edu/wp-content/uploads/2013/04/Using-ModelBuilder-to-batch-process-files.pdf>

1) A Batch Model with Parameters

Question: How many certified or potential vernal pools are located with 200 feet of roads in Hampden County?

Follow along!

1. Copy the folder \batchmodel from the K:\Drive to your own USB flash drive.
2. Explore the contents of the \batchmodel folder using ArcCatalog. Do NOT add any of the files to your (blank) map!

\eotroads	EOT roads layer from MassGIS for the 23 cities and towns in Hampden County
\vernalpools	Certified and potential vernal pools layer from MassGIS
\ma_counties	County layer from MassGIS
batchmodel.gdb	Empty file geodatabase for the model output

Please realize that this is a *generic* example. We are using the EOT roads here, but this could be any appropriate data set such as streams, utility lines, sewer lines, or bus routes. The same applies to the vernal pools – those could be underground storage tanks, locations of transformers, locations of armed robberies, and more.

Furthermore, there is *not necessary* to first create a map before creating a model – the geoprocessing tools can be run *without* the data layers used being displayed in a map. Creating a map may be *helpful* to visualize the data layers used in the model, but a map is *not needed* to create or run a model.

3. Create a new model, select Insert – Iterators – Feature Classes.

An iterator is a model component that repeats the same process over and over – a great way to automate boring and repetitive tasks. ArcGIS ModelBuilder includes 12 different iterators that all do slightly different things depending on what you need to automate.

A quick tour of using iterators

http://resources.arcgis.com/en/help/main/10.1/index.html#/A_quick_tour_of_using_iterators/002w0000001w000000/

An overview of the Iterator toolset

http://resources.arcgis.com/en/help/main/10.1/index.html#/An_overview_of_the_It erator_toolset/00400000000n000000/

In our example we want to perform the same analysis (buffer and clip) on all 23 EOT road datasets for Hampden stored in the \eotroads folder – hence we are using the Iterate Feature Classes iterator that also works for shapefiles or rasters.

4. Double-click on the iterator and browse to the \eotroads folder to define the Workspace or Feature Dataset. Leave the rest of the parameters blank.

Your iterator is now properly defined!

The blue oval shows the workspace/folder used by the iterator and the green oval shows the file name of the first file inside that folder (here eotroads_112.shp).

Now we need to add a geoprocessing tool to our model so our iterator can run that geoprocessing tool on all input files – automatically!

5. Add the Buffer tool to your model and add a connector between the iterator's output (= the green oval) and the Buffer tool. Select the connector tool, click once on the green oval, and click a second time on the Buffer tool. Select Input Features from the menu that appears. A blue connector now runs between the iterator and the Buffer tool.

This is great – with this you have defined the data layer that will be buffered and the iterator ensure that this buffering will occur automatically for all 23 shapefiles stored inside the \eotroads folder.

6. Double-click the Buffer tool to define the rest of the tool parameters.

Buffer Distance 200 Feet (this will become a model parameter later on)
Dissolve Type ALL

For the Output Feature Class browse to the batchmodel file geodatabase in the \batchmodel folder and enter %Name%_buf as the file name. %Name% is a so-called replacement string that will write the same output file name as the input file name. The _buf will be added to each file name to indicate that this is a buffered data set.

7. Run the model!
8. Explore the model output in the batchmodel file geodatabase – you should have 23 files with the same file name as the 23 input files except for the _buf at the end. Add a couple of road and buffered roads to the map to confirm your model performance.

Your Turn!

- Expose the buffer distance as a model parameter.
- Add the Clip tool to clip the potential or certified vernal pools that are located inside your road buffer.
- Expose the vernal pools as a model parameter.
- Save and document your model!