How can I create a DEM from contour lines?

Q: How can I create a DEM from contour lines?

Answer

Depending on what you want to use the resulting raster for, there are a few alternatives. It is possible to generate a DEM from a contour line shapefile, though some methods will tend to have "stair-step" artifacts and lower spatial resolution than the original data. Adding data from other sources and pre-processing your contours can reduce these problems.

1. You can use the contour lines as input to build a TIN, and then export the TIN to raster. See these ESRI Webhelp pages:

2. If you have the 3D Analyst extension use the "Topo" tool. It is designed to create hydraulically correct surfaces, but requires additional input data; see this ESRI webhelp link:
   - The additional data, such as streams, local high points (hilltops), lakes, and sinks, will help you create better results both in Topo and in generating a TIN.

3. If you only need a rough approximation of the terrain you can convert the contour lines to points (e.g. their vertices become points with the height attribute) and then subsample the points and interpolate a surface with a Spatial Analyst or 3D Analyst interpolation tool, such as IDW:

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