Lecture 3b

Database Management and Geodatabases
Lecture 3b: Outline

I. Databases
   A. Attribute Data
   B. Types of Databases
      A. Relational vs. Non-Relational

II. Table Relationships
   A. Preparing Tables
   B. Joins and Relates

III. Geodatabases
   A. Types
   B. Structure and Creation
   C. Geodatabase Behavior
      A. Schemas and Domains
      B. Topology
   D. Creating and Editing Data
   E. Geodatabase Annotation
Topology:
- The study of geometric properties that do not change when the forms are bent, stretched or undergo similar transformations.
- Captures the relationship between features.

3 Types of Relationships:
- Adjacency
- Connectivity
- Containment
Geodatabase Behavior

Topology

- In ArcGIS...applied to vector data models.
- Objective: Keep data clean.
- Identifies undershoots, overshoots, overlaps, etc.
Geodatabase Behavior
Topology

Map Topology:
- Allows you to build relationships and edit features in the same layer.
- Available in ArcMap and lasts the duration of the edit session.
- Can be created for shapefiles and geodatabases.

Geodatabase Topology:
- Provides more sophisticated topology.
- Only available during an edit session.
- Created inside a geodatabase only. Not available for shapefiles.
Geodatabase Behavior

Topology in ArcGIS

- Adding the Topology Toolbar:
  - View → Toolbars → Topology
Geodatabase Behavior

Geodatabase Topology

- **Geodatabase Topology:**
  - You must create a separate topology layer for each feature class in a geodatabase. Points, lines, and polygons must have separate topology layers.
  - Must reside in same *feature dataset* as the feature class to work!
  - Only available in ArcEditor and ArcInfo

- **To Build**
  - Open ArcCatalog and navigate to the appropriate feature *dataset*.
  - Right-click on/in the feature dataset and go to New....Topology.
  - Use default tolerance
Creating and Editing Data

- Create new features or update and fix errors and inconsistencies in current data.

- Often, printing out maps helps to identify errors you might otherwise miss.

- Rubber Sheeting (Spatial Adjustments)
  - Fitting a local equation to adjust coordinates of features.
Creating and Editing Data

- **Editing Tools**
  - Select, split, update, merge and delete features.

- **Advanced Editing Tools:**
  - View ➔ Toolbars ➔ Advanced Editing

ESRI Editor Tutorial:
Editing Tips and Tricks

- Select Features Tool vs. Edit Tool
- Geodatabase Topology
  - Can not delete a feature class unless you delete topology first!
- Create archive (backup) versions of your data.
- **Save Edits** button is *different* from the **Save** (document) button.
- **Save often! Save often! Save often!**
Geodatabase Annotation

- Stored in *annotation feature classes*.
- Attributes and can either be inside a feature dataset or a standalone feature class.
- If you have a few hundred pieces of text or if you want editable text that you will use in many maps, use geodatabase annotation. Ex. Street Names for a City.
- Faster than working with *Map Document Annotation*.
- Can be imported from *labels, map document annotation, CAD annotation* or created from scratch.

Creating and Editing Annotation:
http://webhelp.esri.com/arcgisdesktop/9.2/tutorials/ex_10_creating_and_editing_annotation.htm
Geodatabase Annotation

- Two Types of Annotation:
  - **Standard**: Marks a general location: Ex. A mountain range.
  - **Feature-Linked**: Associated with a specific feature in another feature class in the geodatabase. Ex. An address associated with a property parcel. Reflects a value in the associated feature class.

- Both types can contain annotation classes with their own:
  - Default symbology (i.e. size, color, font)
  - Visible Scale Range
  - Ex. Major Roads may have a larger and bold font compared to minor streets.
To Create:

In ArcCatalog, navigate to the geodatabase/feature dataset of interest.

Right click → New Feature Class…

- Make sure you select “Annotation Features”