Data Production and Editing Techniques

Three Days

Overview

Intended for the GIS technician, this course teaches the software skills and concepts needed to automate and maintain feature data in an ArcGIS geodatabase. Using the tools available with ArcGIS software, you learn techniques for data preparation, conversion, and editing. You also learn how topology and other geodatabase validation rules help maintain data integrity as part of an editing workflow. This course teaches practical methods for working with spatial and attribute data with an emphasis on data stored in the geodatabase. Each day concludes with a project, allowing you to apply these techniques on your own.

Audience

This course is designed for experienced ArcGIS users who need to create and update data. GIS technicians responsible for maintaining their organizations' geographic data holdings will find the course of particular benefit. Those who are interested in automating data creation and maintenance tasks using scripts may also wish to enroll in Introduction to Geoprocessing Scripts Using Python, which pairs well with this course.

Prerequisites and recommendations

Students should have completed ArcGIS Desktop II: Tools and Functionality or Learning ArcGIS Desktop or have equivalent knowledge.

Goals

- Convert data stored in different formats to the geodatabase format.
- Use a data workflow and editing process in ArcGIS.
- Solve common coordinate system problems.
- Create and modify features using ArcMap sketch and edit tools.
- Create and edit feature attributes and tables.
- Maintain data integrity with geodatabase rules.
- Create metadata to document datasets.

Topics Covered

Importing and loading data: Geodatabase data loading workflow; Evaluating source data; Preparing source data; Creating geodatabase tables and feature classes; Data loading tools; Post-loading workflow; Setting metadata.

Correcting coordinate systems: Coordinate systems overview; Coordinate system properties; Geographic (datum) transformations; Coordinate system problems and solutions; Projection on-the-fly

in ArcMap; Setting coordinate system properties in ArcMap; Projection and coordinate system transformation tools; Data integration tools.

Spatially adjusting features: Correcting an unknown coordinate system; Spatial Adjustment tools for features; Adding links; Adjustment methods; Integrating new features; Georeferencing rasters (summary).

Data loading project: Students independently use the skills learned in the previous lessons to correct, load and integrate several data layers into a geodatabase.

Creating features visually: Feature creation techniques overview; Digitizing workflow; Feature geometry concepts; Board vs. heads-up digitizing; Discrete vs. Spaghetti style digitizing; Creating polygons from lines and points; Setting the edit environments.

Creating features geometrically: Sketch tools and context menus; Feature construction; Editing environments; Choosing a sketch tool; Sketch construction constraints; Sketch construction options; Creating straight and curved segments; Centerline construction; Parallel construction; Perpendicular construction; Curve construction; Distance-Distance construction.

Editing features: Finding geometry errors; Handling overlapping polygons; Merging and exploding multipart features; Creating and editing multipart features; Reshaping features; Merging features; Splitting features; Tracing features; Editing tips.

Editing with map topology: Coincident and shared geometry; Topology edges and nodes; Map topology concepts; Map topology workflow; Moving nodes; Moving edges; Reshaping edges; Modifying edges; Splitting edges; Digitizing and constructing features in a map topology; Excluding features; Clipping polygons with a line buffer.

Feature creation and editing project: Students independently use the skills learned in the previous lessons to update multiple feature classes with new features.

Creating attributes: Feature attributes and sources; Adding during or after feature creation; Attributes editor and tables; Using defaults, subtypes, and domains; Using the Field Calculator; Transfer from a joined table, from a feature, and from a spatially joined feature class.

Editing attributes and tables: Finding attribute errors with Validate, Summarize, queries, and visual inspection; Attribute editing tools; Using SQL in selections; Making global edits with the Field Calculator and Find & Replace; Editing attributes with Visual Basic; Adding and deleting fields; Exporting records and fields; Creating and using an attribute domain; Creating and using a relationship class with rules.

Editing with geodatabase topology: Geodatabase topology concepts and workflow; Creating a topology with ranks and rules; Setting the cluster tolerance; Validating a topology; Errors and dirty areas; Using the Error Inspector; Fixing various topology errors.

Data maintenance project: Students independently use the skills learned in the previous lessons to correct attribute and topology errors in a new subdivision.