By James Stevens

Junctions in Network Analysis

Network Analysis

- Used in ArcMap to calculate the best route for a new road, railroad, etc.
- Bases the route off of **cost rasters**
  - Use ArcCatalog to create these
  - User establishes shapefiles which define the source and cost cells

Junctions…WTF are they?

- Part of a **Geometric Network**
  - A model for a system of utilities
  - Made up of junctions, edges and topology
- Junctions are one of 2 major elements of a Geometric Network
- Edges are the other

Junctions…WTF are they?

- Junctions are officially defined as……
  - "A feature allowing 2 or more edges to connect and facilitate flow between them"
- Created from **point** feature classes
- New junctions can be created in ArcMap using the editor tools and snapping environment

Types of Junctions

- 2 main types
  - User defined
    - Created based on users point feature classes
    - Correspond to a single junction element
  - Orphan
    - The original edge meeting points of the feature class
    - Can be *subsumed* by user-defined junctions

Network-Junction Relationship

- Junctions and edges correspond to other junctions and edges in the same network
- These are related by tables
- Updating table elements will update junction attributes

Junctions, Sources and Sinks

- Source: A location in which a commodity flows **away** from it
- Sink: A location in which a commodity flows **toward** it
- Thus, source=generating station, sink=consumer
- Junctions can be either of the two
  - User specified
  - Will add a field known as "Ancillary Role" to the attribute table of the junction point feature class
  - Thus, junctions (when serving as sources/sinks) will determine the flow of a geometric network

Questions

1. What is the main objective of Network Analysis in ArcMap?
2. What are the 2 major elements of a Geometric Network?
3. T or F: Updating attribute tables DO NOT also update junction attributes
4. What type of feature classes are junctions?

Sources

- Chang, Kang-tsung. <u>Introduction to Geographic Information Systems</u>. McGraw-Hill. New York, NY. 2010
- ArcGIS Desktop Online Help. What is a Geometric Network?. 14 July 2009. 23 Nov 2009. http://webhelp.esri.com/arcgisdesktop/9.3/index.cfm?topicname=what_is_a_geometric_network?