Advanced Topics in GIS
GEOG 270

Lab 3b – Working with Tabular Data

Southwestern Oregon Community College

Introduction

Key terms

attribute

cardinality

event layer field

alias

join

key field

relate

The power of GIS includes the ability to store information about each map feature. Feature attributes are one of the distinguishing characteristics of GIS data, and they provide the framework that allows you to query and symbolize your data to help you solve spatial problems. Working effectively with ArcGIS requires that you know how to work with tables and attributes.

Topics covered

1. Displaying tabular data

2. Creating table relationships

Learning objectives

After completing this lesson, you will be able to:

✓ Display spatial locations from tabular data.

✓ Calculate and summarize attributes.

✓ Differentiate table cardinality.

✓ Join and relate spatial and non-spatial tables.

Working with tables

Attributes provide intelligence for your map features. With attributes, you are able to ask questions of your data, solve spatial problems, and visualize spatial relationships as maps. Attributes are managed in tables, based on the following concepts:

➢ Tables contain rows and columns.

➢ Each row represents a feature on your map.

➢ Each column represents a descriptive characteristic about your features.

The columns in your table are known as attributes; they may also be known as fields. All rows in your table contain the same attribute columns.

ArcGIS provides a series of relational functions and operators to allow you to ask questions of, or query, the data stored in your tables.

Types of attributes

Each attribute is defined as storing a single type of data. In general terms, your attributes can be grouped into categories of data, which include:

Dates	Date attributes can store both calendar date and time information.
Numbers	Several types of numbers can be stored in your tables. These include short or long integers, and single- or double-precision floating-point numbers.
Text	Text attributes, also known as strings, can store any alpha-numeric character, as well as special characters such as #, %, or &.
Binary data	Binary data is used to store and manage geometry or feature shape information. These attributes are managed using a variety of ArcGIS tools.

Field names are the names you give to the columns in a table. The names should give an indication of what data is contained in that particular column. Consider the following guidelines when naming your geodatabase attribute fields.

Guidelines for field names

✓ Must be unique within the table.

✓ Must begin with a letter.

✓ Cannot contain reserved words (i.e., words used exclusively by the database).

✓ Cannot contain spaces or other special characters.

✓ May contain letters (A-Z, a-z), numbers (0-9), or an underscore (_).

Field aliases allow you to assign an alternate, or alias, name for a field. Because you cannot use spaces or most special characters in a field name, you can use an alias to display a field name that contains these special words or characters. For example, a field name of *Street* could have an alias of *Street Name*.

Working with Microsoft Excel data in ArcGIS

You can open Microsoft Office Excel tables directly in ArcGIS and work with them much like other tabular data. For example, you can add them to ArcMap, preview them in ArcCatalog, and use them as inputs to geoprocessing tools. Because Excel files may have many separate worksheets, when you browse to an Excel file, you will need to choose which worksheet to open. Each worksheet will contain a $ character next to the sheet name. You can view each worksheet in ArcGIS as a tabular data source.

Displaying locations from tabular data

In addition to data sources, such as a shapefile or geodatabase feature class, you can add tabular data that contains geographic locations in the form of x,y coordinates to your map. After you have added the tabular data to your map, it becomes an **event layer** and behaves much like other point feature layers. For example, you can query and symbolize your event layer, just as you would other layers.