Outline

- Definition of Terms
- Tables in GIS
- Characteristics of Tables
- Joins and Relates
- Deciding what to map

Feature Class, Entity, Instance

- **Entity**: Each spatial object identified and recorded in the database (point, line, area).
- **Feature Class**: Entities that share common geometric properties.
- **Instance**: A specific entity.

<table>
<thead>
<tr>
<th>Feature Class</th>
<th>Entity</th>
<th>Instance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation Network</td>
<td>Highway, State Road, City Road</td>
<td>IH35, IH10, US 123, RR12</td>
</tr>
<tr>
<td>Urban Area</td>
<td>Residential, Industrial, Recreational</td>
<td>Cabanas Beach, City Park, Ford Plant,</td>
</tr>
</tbody>
</table>

- Each entity has associated properties (attributes) that separates it from other entities.
Non-Spatial / Attribute Data

Attribute = non-spatial information related to entities

- Always has a spatial feature associated with it
- Often in tables
- Each feature in a layer has the same attributes

Types of tables in ArcGIS

❖ Attribute table
  - Stores attributes of map features
  - Associated with a spatial data layer
  - Has special fields for spatial information

❖ Standalone table
  - Stores any tabular data
  - Not associated with spatial data
  - OID instead of FID

Tabular data formats

❖ Dbase files
❖ INFO files
❖ ASCII Text files (tab or comma delimited)
❖ Records from SQL database systems
❖ CSV files
❖ Excel worksheets
Components of a Table

Row = Record
Column = (also called Field)

Attribute Types in ArcGIS

**Type**: defines the essential characteristics of an attribute/field. The field type determines the precision and scale values you specify.

**Domain**: defines the legal number of values of an item/field; enforces data integrity. Influences storage.

- **Precision**: maximum number of digits allowed in the field.
- **Scale**: maximum number of decimal places allowed in the field.

<table>
<thead>
<tr>
<th>Data Type</th>
<th>Example</th>
<th>Precision/Length</th>
<th>Scale</th>
<th>Bytes</th>
</tr>
</thead>
<tbody>
<tr>
<td>String/Text</td>
<td>John Doe, 78704</td>
<td>User specified</td>
<td>N/A</td>
<td>1+</td>
</tr>
<tr>
<td>Short Integer</td>
<td>+/- 32,768</td>
<td>1 - 5</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Long Integer</td>
<td>+/- 2,147,483,658</td>
<td>6 - 10</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Float</td>
<td>+/- 9,999.99</td>
<td>1 – 6</td>
<td>1 - 6</td>
<td>4</td>
</tr>
<tr>
<td>Double</td>
<td>+/- 123,456.78</td>
<td>7+</td>
<td>0+</td>
<td>8</td>
</tr>
<tr>
<td>Date</td>
<td>12/31/2012, 12:59:59 AM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ObjectID</td>
<td>123</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geometry</td>
<td>Point, line, outline</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Joining Tables

Join tables based on a common field.

Destination table
Source table

Joined table
### Join Facts

- Joins are temporary relationships between tables; can be removed when no longer needed.
- Original data are not affected.
- Tables must share a common field (key).
- Combines the two tables into a single table.
- **Cardinality**: Relationship between tables.
  - **Destination**: The table that receives the appended information.
  - **Source**: The table containing the information to be appended.

In evaluating cardinality, always put the destination first.

### Rule of Joining

Each record in the destination table must match one and only one record in the source table.

**Eg.** States to Governors; Counties to states or Schools to Districts.

![Diagram of Joining](image)

### Relates

- Similar to joins except:
  - The tables remain separate.
  - Items selected in one table may be highlighted in the related table.

- **Used in the following situations**:
  - **One-to-Many**: Each record in the destination table could match more than one record in the source table.
    - **Eg.** States to cities; States to counties.
  - **Many-to-Many**: Each record in the destination table could also match more than one record in the source table.
    - **Eg.** Students to classes; Stores to customers.
What to map?

- Purpose of the map?
- Target audience
- Example
  - Map of USA showing population density according to counties in 2010
  - Map of USA showing Sex Ratio distribution according to counties in 2010

For further help!

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