

**GEOG 5150/6150 – Fall 2020**  
**Lab 1: Geodatabases in ArcGIS**  
**Due Sunday, 6 September by 11:59pm**

**Overview**

There are two parts to this lab. In Part 1, you will use ArcGIS Pro to organize a collection of datasets into a geodatabase. In Part 2, you will conceptualize a geodatabase by coming up with a scenario where it would be advantageous to store your data in a database format.

**Objectives**

- Import data and create a geodatabase using ArcGIS Pro
- Conceptualize a geodatabase in a simple list format
- Become familiar with geodatabase, table, and attribute field concepts

The following resource may be of use in completing this assignment:

[What is a geodatabase?](#)

[ArcGIS field data types](#)

[Create a file geodatabase](#)

[Copy feature datasets, feature classes, and tables to a geodatabase](#)

[Import data](#)

[Raster To Geodatabase](#)

**Part 1: Create a geodatabase in ArcGIS**

Create a geodatabase named *County\_SaltLake* from some existing Salt Lake County data available from the Utah AGRC (provided as *Lab1\_Data.zip* on Canvas).

Your final geodatabase will contain 6 feature classes, 1 raster dataset, and 1 table. When your geodatabase is complete, compress it to a .zip file named *Lab1\_yourLastName*. **(Deliverables 1-2)**

**Part 2: Conceptualize a Geodatabase**

Develop a scenario where a database would be applicable for your data storage needs. Since we are working within a GIS context, your scenario should be geospatial in nature, although this does not necessarily mean that all of your data must be geospatial. Here are two examples:

- A cell phone company wants to expand their 5G service coverage. They hire you as a GIS consultant in their marketing department to help target future advertising efforts at households that will fall within their new 5G coverage areas. A geospatial database that would serve this goal may include feature classes for new coverage areas (polygon), cell towers (point), city boundaries (line), all households (point), block level census data (polygon), and a table containing existing coverage statistics (nonspatial) that could be joined to the geospatial information in order to leverage queries.

- The Discovery Channel has just agreed to produce a show about UFO sightings in the United States, and you are friends with one of the producers. Your friend asks you where they should focus their filming efforts, given their tight budget. To answer this question, you create a geospatial database containing UFO sighting locations (point), a surface interpolation model showing the density of sightings (raster), and a table of people who corroborated each of the sightings.

The second example is a bit of a stretch, but it shows that you can be creative with this if you want. Once you have a scenario, think about the datasets you would need to achieve your goal, form of each dataset, and what types of fields/attributes should be included in each dataset. Below, is a partial example based on the 5G scenario so you can see the basic format for your answer. **(Deliverables 3-4)**

Example Geodatabase Concept:

#no need to include comments in your example

- 5G\_Coverage\_Expansion
  - New\_5G\_Areas (feature class, polygon)
    - RegionID (short integer)
    - RegionName (text)
    - RegionArea (float)
  - Households\_Total (feature class, point)
    - HouseholdID (long integer)
    - Address (text)
    - Occupancy (short integer)

**Deliverables (Place items 2-7 in a single, well formatted document named Lab1 yourLastName)**

1. A .zip file containing your geodatabase from Part 1.
2. A screenshot of your geodatabase and its content from the Catalog view.
3. Briefly describe the scenario you chose for you geodatabase concept in Part 2. Why would using a geodatabase for your data storage needs be a good choice in this context?
4. Create a multi-level bulleted list that shows the structure of your geodatabase, with the top level being the geodatabase itself, the second level being datasets, and the third level being attributes. The list should look like a simple file tree structure. For each dataset, indicate whether it is a table, raster dataset, or feature class; list the geometry with each feature class. For each field, indicate the data type.

**5150 Students.** Your geodatabase concept must include at least **5 datasets**, and each dataset must include at least **3 fields**. Specify your dataset / field types as in the example in Part 2.

**6150 Students.** Your geodatabase concept must include at least **5 datasets**, and each dataset must include at least **3 fields**. Additionally, all three data types, and all three feature class geometries, must be used at least once. Specify your dataset / field types as in the example in Part 2.

5. Of the three primary dataset types in a geodatabase, which datatype is used to store vector data, and which datatype stores imagery data?

6. How are spatial attribute data stored in a geodatabase?
7. What are the different field data types used to store numbers, and how do these data types differ? What are some factors to consider when deciding which numeric datatype to use?

**Scoring Rubric (14 points total)**

- Q1: Create a geodatabase from 6 shapefiles, a raster, and an Excel table (3 points)
- Q2: Screen shot of the geodatabase in Catalog view (1 point)
- Q3: Description of scenario and response to question (2 points)
- Q4: Bulleted list of your geodatabase concept, includes 5 datasets, each dataset includes 3 fields, dataset and field types are specified (4 points)
- Q5: Response to question (1 point)
- Q6: Response to question (1 point)
- Q7: Response to question (2 points)