**Geographic Information Science Exercise 1**

**ArcGIS Pro Basics**

These exercises will require you to use the skills and information you learned in Chapter 1, Tutorial 1, and the associated lectures.

Items to keep in mind:

1. Create a new project before beginning an exercise.
2. General location of data files will be provided (see below). You will have to determine exactly which file to use, but the folders you should be working with are identified.
3. Any questions requiring the acquisition of data online will be your responsibility to find the data and download it.
4. Any new tasks required will be described. Otherwise, the tools and techniques required to answer the questions will have been introduced in the tutorials for this lab and any prior labs.

Data files for this exercise:

**mgisdata\USA\**

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**Step 1:** Create a new project (ie. Exercise\_1).

**Step 2:** Save the new project in a new folder called *MyProjects* (or some similar name) and store that in the **\***GISclass\ClassProjects* folder (where your unzipped course data is located). The folder structure should be *\GISclass\ClassProjects\MyProjects.*

**Step 3:** Connect to your GIS class data folder (mgisdata).

**Question 1:** Find the *usdata* geodatabase. List all (names) of the different feature classes, raster’s & tables present **in** the geodatabase (if any) (there are 19 total).

**Point features:**

**Line features:**

**Polygon features:**

**Rasters:**

**Tables:**

**Question 2**: Add the *counties* feature class from the *usdata* geodatabase. How many counties are there in the United States? (Look in lower left corner of attribute table)

**Question 3**: Add the *lakes* feature class to the map. Which is the largest lake in the United States? What is its area? (The area is given in square miles.) (**Hint:** Do **NOT** use the measure tool). Do **NOT** use the *Shape\_Area* field. This is inaccurate. (Do not Google the answer. It is different than you will get in ArcGIS.)

**Name:**

**Area:**

**Question 4:** Using the measure tool measure the area of the same lake as above (using the same units). What was the area that you calculated? Was it the same or different? If you got a different answer, why do you think that was the case?

**Area:**

**Question 5:** In the *states* feature class, what is the minimum, maximum, and average 2014 population density (POP14\_SQMI) for the states?

**Min:**

**Max:**

**Average:**

**Question 6:** Use the *OpenStreetMap* basemap to view the Kent campus in ArcGIS Pro. Zoom in to the extent of the main campus. Take a **screen capture** and insert it here.

**Step 4:** Open a new, blank map in your project. Create a basic map of your birth state (don’t worry about features extending beyond the boundaries of your state – we will learn how to deal with this in a later lab). Include the following features:

1. Give your map an appropriate name (on the map tab)
2. Include the state boundaries (mgisdata folder) and display them as hollow.
3. Include at least two data sets from the data provided for the class (mgisdata folder) (in addition to the state boundary).
4. Search ArcGIS Online for at least 3 data sets that cover your area. These datasets should be of themes of interest to you.
5. Create a 3D scene and add one of the above layers to it (select *Insert > New Map > New Local Scene* from the ribbon)
6. Link the 2D and 3D maps together.
7. Zoom in to the extent of your state.

**Question 7:** Take a **screen capture** of your 2D map, including the Contents pane (make sure that the layers are expanded to show the symbology for each layer), and insert here (make the image large enough so it can be clearly seen – Fill the Page!!).

**Location of Map:**

**Question 8:** Take a **screen capture** of your 3D scene (angled so the 3D is apparent – ie. horizon is visible), including the Contents pane, and insert here (make the image large enough so it can be clearly seen).

**Question 9:** Take a **screen capture** of your map showing the linked 2D & 3D (both views should be visible at the same time in ArcGIS – Side by side). Insert the image here (put it on the next page in the document and use the whole page for the image).

**Deliverables:**

* This answer sheet (Saved as either a Word doc or a PDF)
* Screen captures (embedded in the answer sheet):
  + **Question 6**
  + **Question 7**
  + **Question 8**
  + **Question 9**