FNR 65 Lab 5
Note Taking Exercise and Island Building

Name: _____ Date: _____

Today we will perform some basic analyses and tasks in ArcMap. The main goal for you, the student, is to document the actions you take to successfully perform these analyses and tasks. Below is the general outline of our strategy today. The instructor will lead the class through each step, but the student is required to take notes and document each step. Prepare your notes and submit them to the instructor electronically by Saturday 10/4/14 at 8 PM. Please be as specific as you can. I will give you an example of how specific I want you to be for the first task.

Task 1: Obtain GIS data and load into ArcMap.

Task 2: Create new shapefile

Task 3: Digitize Island

Task 4: Edit Attributes

Task 5: Compose Map and email to instructor

Task 1: Obtain GIS data and load into ArcMap.

1. Go to http://www.naturalearthdata.com/ and click on "downloads.
2. Click on "Cultural" under the Large Scale Data.
3. Download the countries data version 2.0.0 under the "Admin 0 – Countries" heading.
4. Locate the file on your computer. Right click and copy the zip file.
5. Locate your directory on the D: drive. Create a directory/folder called "lab_05."
6. Within the "lab_05" folder, right click and paste the zip file.
7. Double click on the zip file to open it.
8. Select all the files in the zip file and drag them into the "lab_05" folder.
9. Launch ArcMap by double clicking on the ArcMap icon that is on the desktop (or by clicking on the ArcMap icon from the start menu).
10. Open ArcCatalog and locate the directory "../lab_05" by clicking the "Connect to Folder" icon.
11. Drag the ne_50m_admin_0_countries shapefile into the table of contents in ArcMap.
12. Use the zoom in/out and pan tools to explore the map. To zoom, select the magnifying glass with the plus symbol, and click on the area you'd like to zoom into. To zoom out, choose the magnifying glass with the minus symbol. You can also click and drag with either tool to zoom in/out on a large area.
13. Pick an area for your new island.
14. Create a spatial bookmark once you have chosen the location of your dream island. This spatial bookmark will keep us from losing our place if we accidentally pan or zoom away from our island location.
    a. Bookmarks → Create Bookmark.
    b. Name your bookmark "Island Location"

FNR 65 Lab 5
Note Taking Exercise and Island Building

Task 2: Create new shapefile

1. In the ArcCatalog window on the right hand side of the ArcMap interface, right click on your "Originals" folder (if this window has minimized, expand it by clicking on the "Catalog" tab on the right hand side of the ArcMap interface).
   a. Hover your mouse over "new."
   b. Select "Shapefile."
2. Name the new shapefile "Island."
3. Select "polygon" as the feature type.
4. Select Edit underneath the spatial reference description window.
   a. Expand geographic coordinates folder at the top of the list.
   b. Scroll down to "world" and expand the folder.
   c. Select "WGS 1984" (at the bottom of the "world" folder).
   d. Hit "OK".
5. Select "OK" to finish creating the new shapefile.
   a. Your new shapefile has been automatically added to the Table of Contents (See the window on the left).
6. Repeat steps # 7-11 to create shapefiles for each feature type of vector file (polyline and point).
   a. Name the next file "Trees" and select "point" feature type.
   b. Name the third file "Roads" or "Streams" and select "polyline" feature type. (This is up to you because you must be creative with your island. Is it a deserted island with only streams, or a bustling tourist destination with many roads?)
   c. Remember to set the coordinate system to WGS 1984 for each file.
7. Set Relative paths in ArcMap settings. This ensures that the .mxd will be able to locate your files even if their file path names have been changed.
   a. Click on "File" on the toolbar at the top of the ArcMap interface.
   b. Select "Map Document Properties".
   c. Check the box labeled "Store relative pathnames to data sources".
   d. Click "OK".
8. Save your ArcMap document by selecting the save icon on the upper toolbar of the ArcMap interface.
   a. Navigate to the (D:) drive and save the .mxd (ArcMap Document File) to your lab01 workspace folder.
   b. Use the name of your island as the title of this file, so it will be easy to locate later.

Task 5: Digitize Island

1. Right click on your Island in the Table of Contents.
   a. Hover your mouse over "Edit Features" .
   b. Select "Start Editing".
   c. This will add an editor toolbar to your ArcMap interface (if it was not there already).
   d. It will also open a "create features" window that will allow us to edit the shapefile.
2. In the "create features" window, select your "Island" shapefile icon.
   a. A "construction tools" window will appear at the bottom of the Create Features toolbar.

      b. Select "Polygon" in this window.

      c. Your cursor will become a crosshair symbol when you move it into the map window.

3. Click your mouse on a space where you'd like to begin your island border.

      a. Continue clicking once to add new points that add to the border of the island.

      b. When you are happy with the shape and size of your island, double click to add a final point, this will close your polygon

4. On the editor toolbar, click on the word "Editor".

      a. Select "Save Edits" from the drop down menu.

      b. Once saved, select "Stop Editing" from the drop down menu.

5. Repeat steps # 14-19 to add trees, rivers or roads to your point and polyline shapefiles.

      a. When editing the trees shapefile, be sure to select "point" as the feature type.

      b. When editing your roads/streams/rivers shapefile, be sure to select "polyline" as the feature type. (Keep in mind that you will name these streams later, so don't plan on creating 200 streams.)

      c. If you are having trouble with the polyline snapping to the edges of your island polygon, zoom farther in on your island location.

      d. Your layers may need to be rearranged in the table of contents in order to see what you are digitizing.

6. Change the colors of your island/trees/rivers/roads by adjusting the symbology of each shapefile.

7. Select the rectangle displayed underneath the label "Island" in the table of contents.

8. A symbol selector window will pop up, choose an appropriate fill color and outline color for your island.

      a. You can adjust the outline color widths as well.

      b. Click OK when you are done, and see that the icon for your feature has updated itself in the Table of Contents.

9. Repeat the process for rivers or roads (choose an appropriate color and width of the line).

10. For the trees, in the symbol selector window, type "Tree" into the search box at the top of the window.

      a. Select a tree style you'd like to use, and make sure it is colored appropriately.

      b. Click OK.

11. To make the trees different sizes, right click on the shapefile name "Trees" in the table of contents.

      a. This will bring up the layer properties window.

      b. Select the "Symbology" tab at the top of the window.

            i. Click on the "Advanced" pull down menu.

            ii. Select the "Size" option.

            iii. In the "Size Points by Value in this field:" pull down menu, select "Random".

            iv. Set the Random minimum to "1" and the Maximum to "50".

            v. Click OK.

      c. Click OK.

12. When you are happy with your island and its features, save your edits, and stop editing. Also be sure to save your updated .mxd file.

Task 6: Edit Attributes

FNR 65 Lab 5
Note Taking Exercise and Island Building

1. Right click on your polyline shapefile.
2. Select "Open Attribute Table".
3. From the pull down arrow menu at the top of the attribute table window, select "Add Field".
4. In the new "Add Field" Window, type "Name" into the "Name" window.
5. Set the Type to "Text"'.
6. Click OK.
7. On the Editor Window toolbar, select "Start Editing".
8. Double click on the first line of the attribute table, and type a name for your road and/or stream/river.
9. Continue double-clicking on the lines to name each feature.
10. When you are finished typing the names of your lines, select "Save Edits" and "Stop Editing" in the Editor toolbar.
11. Select the "Identify" icon in the tools toolbar and click on one of your rivers/streams.
    a. This will bring up the "Identify" window, and you will be able to see the name of that river/road/stream.
12. Open the attribute table of your island polygon.
    a. Right click on your "Roads" or "Streams" layer in the Table of Contents (whichever you chose to create).
    b. Click on "Open Attribute Table".
    c. From the pull down menu at the top of the attribute table window, select "Add Field".
    d. Name this field "Area" and set the type to "Double".
    e. Click OK.
13. Right click on the name of the new field "Area".
14. Select "Calculate Geometry".
    a. An alert window will inform you that you must start an edit session to complete this task, select "Yes".
15. From the Property pull down menu, select "Length – disabled".
    a. Why is this disabled? Because we are in decimal degrees, and this map is not projected, but in a geographic coordinate system. We must wait until it is projected to calculate the area of our island polygon.
16. Click "Cancel".
17. Close your attribute table window
18. Save your .mxd.
19. Be sure to back it up to a U drive or thumb drive, or zip and email your workspace folder to yourself, to make sure you don't lose all of your hard work!.
20. Admire your beautiful island.

Task 7: Compose Map and email to instructor

1. Add basic cartographic elements to your dream island in layout view.
    a. Click on the Layout View Button at the bottom of the ArcMap Interface (next to data view).
    b. Click on the "Insert" tab at the top of the ArcMap interface, and take a look at the cartographic elements that can be added (Legend, Scale Bar, North Arrow, Title).

FNR 65 Lab 5
Note Taking Exercise and Island Building

    c.   Use these tools to add the name of your island as the title, a scale bar and a north arrow. Make sure to only use appropriate cartographic elements. If you are having difficulty with this, refer to the Basic Cartographic Design Reference.

    d.   Include information about your island (such as where it is, what it is for, whether it is developed or deserted)

    e.   Be creative!

2.   Email your map to the instructor.