Lab Assignment 2 – Web Mapping with Google Earth, KML, and Google Map

Due Date: 01/05/2012

Overview

This lab assignment is designed to help you explore the potential of Web mapping with some of the most popular tools (e.g. Google Earth, KML, and Google Map). The results will be published on your website and made available to anyone through the Internet.

This assignment is divided into five parts:

- Part I: Google Earth
- Part II: KML
- Part III: Using Google Earth to create KML
- Part IV: Using ArcGIS to create KML
- Part V: Creating Customized Web Mapping with Google Map

<u>Data</u>

The GIS data to be used are as following (downloadable on the Blackboard):

- PG_Hospitals.shp
- PG_CensusTracts.shp

Part I: Google Earth

Your first task is to go to here and download Google Earth (V6): <u>http://earth.google.com/</u>

When installing, you can just follow the instructions on those pop-up windows. There is one step that will ask you to select setup type, make sure you check "Complete".

Even though Google Earth provides state-of-art user interface, it still can be overwhelming to use it because there are so many buttons, menus, and options. Therefore, you may want to spend some time to read the User Guide (below) and do some testing.

• <u>http://support.google.com/earth/bin/static.py?hl=en&page=guide_toc.cs</u>

Part II: KML

KML refers to Keyhole Markup Language, which is a file format used to display geographic data in an Earth browser such as Google Earth, Google Maps, and Google Maps for mobile. KML uses a tag-based structure with nested elements and attributes and is based on the XML standard. All tags are case-sensitive and must be appear exactly as they are listed in the KML Reference.

1. Getting to Know KML

KML was developed for use with Google Earth. However, it can be displayed by many other applications including: Google Maps, Google Maps for mobile, NASA WorldWind, ESRI ArcGIS Explorer, Adobe PhotoShop, AutoCAD, Yahoo! Pipes, and so on.

If you are not familiar with KML, before you start next session, you might want to check out this KML tutorial: <u>http://code.google.com/apis/kml/documentation/kml_tut.html</u>

Also, you can even test some KML samples by using Google Earth which you have installed. The samples can be found here: http://code.google.com/apis/kml/documentation/KML_Samples.kml

2. Creating KML

There are many different ways of creating KML files. Obviously, you can simply write KML codes just like HTML. And, you can also create KML files with Google Earth. In addition, you can create KML using some software such as ArcGIS. These last two options are the simplest way of creating KML because you don't need to deal with coding. However, you may pay a price of not being able to control what exactly you want to do.

Now let's try the first option.

The typical file structure of KML is as below:

```
<?xml version="1.0" encoding="UTF-8"?>
<kml xmlns="http://www.opengis.net/kml/2.2">
<Placemark>
<name>New York City</name>
<description>New York City</description>
<Point>
<coordinates>-74.006393,40.714172,0</coordinates>
</Point>
</Placemark>
</kml>
```

Your task:

• You are required to modify the KML file by: (1) first selecting a location that you like; (2) obtain/convert the coordinates; (3) re-write the part of codes for Name/Description and coordinates within the KML file. Lastly, you will upload the KML file to the server and then create a link to it on one of your web pages.

Part III: Using Google Earth to Create KML

You can also create Google Earth to create KML. This is actually easier because it does not involve coding.

Your task:

- You will create a KML file for George Washington University, the White House, and the Washington Monument respectively.
- You will need to use the customized images or logos.
- You will need to add your own descriptions for these three landmarks. Be sure to include the author's name (i.e. you) at the end of description so that I know it's your work.
- Make sure your user ID is part of the file name.
- Upload the KML files to the server and then create corresponding links on one of your web pages.

Part IV: Using ArcGIS to Create KML

There has been some collaboration between Google and ESRI. One of the examples is that KML can be created with ArcGIS (i.e. ArcMap) and also be displayed by ArcGIS (i.e. ArcGlobe).

To create KML using ArcMap, there are two ways.

1. Creating KML with the Default Conversion Tool in ArcGIS

Add the two data layers - "PG_Hospitals" and "PG_CensusTracts".

Change the symbology to make the map informative. The census tracts should be displayed based on the 2000 population.

Your task:

• You will create two KML files (with .kmz extension). Make sure your user ID is part of the file name. Upload the KML files to the server and then create a link to each on one of your web pages.

2. Creating KML with the Extension Tool in ArcGIS

One of the drawbacks of using the default conversion tool provided by ArcGIS does not retain some more advanced symbology effects. So, it is only logic to look for a better way to create KML files using ArcGIS.

First, go to this website:

http://resources.arcgis.com/gallery/file/geoprocessing/details?entryID=B49A0775-1422-2418-34E1-EEA6DD9851BA

The script that we are going to download is Export_to_KML_V2_5_5. This is the latest version.

After unzip, read the Export_to_KML_documentation.pdf carefully. It needs extra steps to run it on Win7/Vista and ArcGIS 10.

Important! Before the installation, make sure you turn off ArcGIS.

Your task:

- You will create two KML files. Upload the KML files to the server and then create a link to each file on one of your web pages.
- For the census tract data, you will create 3D based on the population (see example below).



Extra Practice:

• If you have Google Earth Pro, you may want to try to use the Movie Maker to create an animation. It should be similar to this example: <u>http://www.kimberresources.com/properties-google-earth</u>

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