Deliverable 3: **Manipulate Attribute Table**

Assigned Date: **Wed/Thu, 2015-02-25/26** (week 07)

Due Date: **Wed, 2015-03-18, 08:30 AM** (week 09)

Grade Value: **35%** of Final Grade

# Important

1. *Plagiarism is a serious offense and will not be tolerated! Plagiarized assignments will receive a grade of 0 (zero) as per college policy. In addition, professionalism/participation grades will be reduced to 50%. Please refer to the official college policy on academic misconduct which can be found here:* [*http://www.niagaracollege.ca/Content/LinkClick.aspx?fileticket=i-eJpagoNDQ%3d&tabid=1001*](http://www.niagaracollege.ca/Content/LinkClick.aspx?fileticket=i-eJpagoNDQ%3d&tabid=1001)*.*
2. *Save your work periodically.*
3. *The assignment will be evaluated in terms of both functionality and industrial standard coding style.*

# Background:

A feature class is really just a table containing a single geometrical filed (point, polyline, or polygon shapes) and a set of attribute fields. The tabular information enables you to visualize, query, manipulate, and analyze your data.

Most relational database design guidelines advocate organizing data into multiple tables for the purpose of removing duplication of data. When you need to map an attribute that does not exist in the current, it can be obtained from another table through either join or relate functionalities in ArcGIS.

# Purpose:

Use Python script to 1) create a new field in a polygon feature class, and 2) aggregate a point feature class and add the aggregated results into the polygon feature class.

# Procedures:

1. This assignment attempts to accommodate the issue raised by ‘hcopeland’ in 2011 from the esri’s discussion forum (<http://forums.arcgis.com/threads/41111-Slow-Count-Points-in-Polygons-Script>). If the hyperlink fails to work, please refer to the same downloaded article \d3ManipulateAttributeTable\d3SlowCountPointsInPolygonsScript.mht. It is a working piece of codes and conveys many important programming concepts. However, the author has complained the slowness and you are asked to solve the issue.
2. Copy the \assignments\d3ManipulateAttributeTable\d3RawData subfolder to C:\temp (create it if necessary).
3. The \d3RawData subfolder contains two file geodatabases:
   1. The d3Raw.gdb contains 2 feature classes. Carefully examine their attribute tables.
      1. Point feature class npFarm: 91 Ontario farms located within the Niagara Peninsula.
      2. Polygon feature class npCsd: 2001 Census Subdivision boundary covering the Niagara Peninsula.
   2. The usa.gdb has four feature classes. They can be used to test the efficiency of your codes.
4. Write a piece of Python script, named as LastNameInitialGisc9307D3.py in your H:\ drive, to:
   1. Create a new \d3ProcDataLastNameInitial subfolder within c:\temp subfolder. Delete the new subfolder if it exists before create it. The d3ProcDataLastNameInitial subfolder is used to save your own processed results.
   2. Create a file geodatabase named as d3Proc.gdb within d3ProcDataLastNameInitial subfolder.
   3. Create a polygon featureclass of the same map projection named as countyFarm in d3Proc.gdb. The attribute table of the countyFarm featureclass will contain ONLY two columns below (of course, you have no controls on OBJECTID\*, Shape\*, Shape\_Length, Shape\_Area columns):
      1. CountyName field that is the same as the Name column of the npCsd featureclass; and
      2. NumOfFarm field that stores the actual number of farms that are located within the corresponding individual county (npCsd) using npFarm feature class.
   4. Print out the number of seconds in integer of running the snippet in the Python Interactive Window.
5. Use the featureclasses usStates (52 records), usCounties (3,219 records), usCities (3,557 records), usCities\_dtl (35,432 records) provided in \d3ManipulateAttributeTable\d3RawData\usa.gdb to test the speed of your codes.

# Special Notes:

* 1. Make sure your codes, LastNameInitialGisc9307D3.py, will be working properly on your instructor’s machine, where the c:\temp\d3RawData subfolder, containing the required usa.gdb and d3Raw.gdb, already exists on the instructor’s machine.
  2. Make sure your code is not crashed as it is run multiple times.

# Deliverables:

Send only the LastNameInitialGisc9307D3.py to your instructor by email at [jjiang@niagaracollege.ca](mailto:jjiang@niagaracollege.ca). If your mail server fails to send the .py file, then compress the .py file using 7-Zip application instead (do not use WinZip, WinRar, or other compression applications) and resend.

# Marking Scheme:

* 1. 10% Email etiquette and formal transmittal letter;
  2. 80% Functionality and professional coding style;
  3. 10% File and folder structure.