

Student Name: _____

Weight: 7.5%

Student ID: _____

Marks: /34

Assignment 2: Geoprocessing for Map Overlays

Learning Outcome(s)

This assignment incorporates components from the first semester such as coordinate systems, the Dominion Land Survey (DLS), the National Topographic System (NTS) and geodatabase design and creation.

This assignment is an individual effort.

Introduction

Your task is to automate the data conversion and manipulation process of base features to support mapping initiatives. The base features have been referenced based on the NTS map sheet and are in shapefile format. The ATS fabric is also available in shapefile format.

The GPS location, NTS base data and ATS fabric must be properly managed and converted into file geodatabase feature classes. Use feature datasets where appropriate to store relevant datasets.

- GPS point location
- Study area (based on a Township/Range of the DLS)
- Land location data based on the DLS
 - township/range
 - sections
 - quarter sections
 - legal subdivisions
- 1:20,000 Base Features

The data has been provided to you in a shapefile format. Instructions

The following assignment steps will help to direct your project:

1. Create a list of all the assignment datasets prior to importing into the geodatabase
2. Describe the data type, geometry and spatial reference of each shapefile in the assignment data folder
3. Check if the assignment geodatabase already exists:
 - a. If the geodatabase exists, delete it prior to making the assignment geodatabase

4. Create a file geodatabase called **Assignment02.gdb** and create feature datasets to store all assignment data. Ensure the .gdb is created in the following directory: “C:\GEOS456\Assign02\”
5. Convert all assignment data and store them in the geodatabase and appropriate feature datasets. Note the following:
 - a. All features stored in the project file geodatabase must possess the same coordinate system (UTM, Zone 12 NAD 83)
 - b. Identify the township in which the GPS Point is located. This will be the study area
 - c. Once the Study Area has been determined, import the TWP to the geodatabase and name it **Study_Area**
 - d. Ensure that multiple feature classes are merged (if necessary) into one feature class prior to clipping
 - e. Data must cover the entire township but must not extend beyond the boundary of the study area
 - f. Include all ATS datasets (except the road allowance) clipped to the study area and all 1:20,000 base features provided in the assignment data folder
 - g. The base features in the RAW data folder are not adequately named. Base features should be named more appropriately when stored in the geodatabase
6. Once all features have been properly managed and stored in your geodatabase, create a list of the features within each feature dataset and describe the final spatial reference of each feature class
7. Only the final datasets must be stored in your geodatabase. Remove all intermediate and non-essential features in the geodatabase.
8. Use Python cursors to identify and print the full DLS description
 - a. *Example: LSD6 - NW36 - TWP5 - RGE12 - W5*
9. Incorporate the use of geoprocessing messages throughout your script to show the first and last message of each geoprocessing tool

The whole process outlined above must be completed using only one script. No map layout is required for this assignment.

Your script must not alter the RAW data in any way and must run from the following directory:
“C:\GEOS456\Assign02\”. Example directory below:



Name	Date modified
Base	2/6/2024 2:32 PM
DLS	2/6/2024 2:32 PM
GSP_Pointe.CPG	1/27/2019 10:49 PM
GSP_Pointe	1/27/2019 10:49 PM
GSP_Pointe	1/27/2019 10:49 PM
GSP_Pointe.sbn	1/27/2019 10:49 PM
GSP_Pointe	1/27/2019 10:49 PM
GSP_Pointe	1/27/2019 10:49 PM
GSP_Pointe.shx	1/27/2019 10:49 PM

Note: Check your script prior to submitting. If your script produces errors and requires debugging, and/or if the workspace directory is incorrect, and/or more than one submission loaded to D2L, **5 marks** will be deducted from the total of your assignment

Assignment Deliverables

Submit your Python script to D2L in the following naming convention:

GEOS456_Assign<Assignment #>_<Last Name>.py

Ex: GEOS456_Assign02_JohnstonStewart.py

Content

Submit the assignment to your instructor in digital format. The required components for document submission are:

1. One Python script
 - i. Author, date and script purpose must be included at the top of the script
2. Comments in the script
3. Any applicable references as comments in the script
4. Do not submit any data. Your script will be used to generate the assignment results by your instructor.

Due Date

Consult course calendar. Late assignments will not be graded.

Assignment Assessment

Refer to the marking criteria below.

Note:

- It is expected that all assignment reports will be grammatically correct.
- Although it is understood that learners will collaborate with each other to achieve objectives, assignment submissions must be unique in content and approach. If this is not the case, then the Academic Dishonesty policies will be enforced.
- Proper citation of referenced material must be provided. If this is not the case, the Academic Dishonesty policies will be enforced.