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GEOG4057

10 December 2025

Project 2 Report

The code was developed in class with Dr. Lei Wang following the project 2 notes. First data was downloaded from the provided data folder with a tif raster file, a csv file, and a .json file. Project 2 was practicing using google API to open a table with data to create a shapefile. Data from the digital elevation model provided by Lei Wang data added to the shapefile as elevation data in a new field. At this step I had an issue with geopandas on the LSU computer but was able to resolve this at my home computer, the LSU computer could not read gdal. The first step was generating the code in a Jupyter notebook before committing it as a python script. Secondly, the codes were copied into a python file and cleaned in order to debug, the exploratory exercises were removed. Then, to make the python file user friendly for other coders, the script was organized as a main () function named here as project2 with the input parameters of project_name, csv_path, raster_path, and shapefile_path. The actual local paths and inputs were moved to the bottom of the function for other users to edit if needed and the modules were all organized at the top of the code. This was debugged and saved. Finally, a new map project was created in ArcGIS Pro and to create a new python tool box that could call the python function we created in our script. The python script was imported into the toolbox as a module and in the execute() function of the tool class the parameters listed earlier were defined and labeled in an index. In addition, the index of these parameters are organized to call to the paired parameter in the python script and call the project2 function created. This resulted in a python toolbox in which the use can plug in a local csv file, shapefile, and raster dataset and create a new field with elevation data from the DEM 'USGS/3DEP/10m' in an API project.

messages

Start Time: Wednesday, December 10, 2025 4:09:54 AM
Adding elevation to boundary...
Succeeded at Wednesday, December 10, 2025 4:09:54 AM (Elapsed Time: 0.03 seconds)

```
geom_list = []
with arcpy.da.SearchCursor('boundary.shp', ['SHAPE@XY'], spatial_reference=4326) as cursor:
    for row in cursor:
        X,Y = row[0]
        geom = ee.Geometry.Point([X,Y])
        geom_list.append(geom)
geom_col = ee.FeatureCollection(geom_list)
elev = dem.sampleRegions(geom_col).getInfo().get('features')

✓ 0.3s Python
```



```
>v
i = 0
with arcpy.da.UpdateCursor('boundary.shp', ['elevation']) as cursor:
    for row in cursor:
        elevation = elev[i]['properties']['elevation']
        row[0] = elevation
        cursor.updateRow(row)
        i += 1

✓ 0.0s Python
```

Variables

```
project2.py > ...
1 import ee
2 import pandas as pd
3 import arcpy
4 import geopandas
5
6
7 ee.Authenticate()
8 ee.Initialize(project="ee-cerratoaishahp2")
9
10 dem = ee.Image('USGS/3DEP/10m')
11 geom = ee.Geometry.Point([-91.0989573, 30.3529013])
12
13 geom_col = ee.FeatureCollection([geom])
14 elev = dem.sampleRegions(geom_col). getInfo()
15 elev['features'][0]['properties']['elevation']
16
17
18 table = pd.read_csv(r"C:\Users\Asiha\Documents\Scripts\finals\b"
19 table.head()
20
21
22 rai = arcpy.Raster(r"C:\Users\Asiha\Documents\Scripts\finals\f"
PROBLEMS OUTPUT TERMINAL ... Python Debug Console + ×
+ ~~~~~~ + CategoryInfo : ObjectNotFound: (conda:String) [], CommandNotFoundException + FullyQualifiedErrorId : CommandNotFoundException
PS C:\Users\Asiha\Documents\Scripts\finals> & 'c:\Program Files\ArcGIS\Pro\bin\Python\envs\arcgispro-py3\python.exe' 'c:\Users\Asiha\.vscode\extensions\ms-python.debugpy-2025.16.0-win32-x64\bundle\libs\debugpy\launcher' '52182' '' 'C:\Users\Asiha\Documents\Scripts\finals\project2.py'
PS C:\Users\Asiha\Documents\Scripts\finals> ^
PS C:\Users\Asiha\Documents\Scripts\finals>
PS C:\Users\Asiha\Documents\Scripts\finals> c;; cd 'c:\Users\Asiha\Documents\Scripts\finals'; & 'c:\Users\Asiha\.conda\envs\arcpy_clone\python.exe' 'c:\Users\Asiha\.vscode\extensions\ms-python.debugpy-2025.16.0-win32-x64\bundle\libs\debugpy\launcher' '52211' '' 'C:\Users\Asiha\Documents\Scripts\finals\project2.py'
c:\Users\Asiha\.conda\envs\arcpy_clone\lib\site-packages\ee\deprecation.py:215: DeprecationWarning:
Attention required for USGS/3DEP/10m! You are using a deprecated asset.
To make sure your code keeps working, please update it.
This dataset has been superseded by USGS/3DEP/10m_collection

Learn more: https://developers.google.com/earth-engine/datasets/catalog/USGS_3DEP_10m
warnings.warn(warning, category=DeprecationWarning)
```

Watch

Call Stack

Breakpoints

The screenshot shows the Visual Studio Code (VS Code) interface with a Python script named `project2.py` open in the editor. The code uses the Earth Engine API (`ee`) and other Python libraries (`pandas`, `arcpy`, `geopandas`) to process CSV and raster files. A terminal window below the editor shows command-line output related to the script's execution.

```

1 import ee
2 import pandas as pd
3 import arcpy
4 import geopandas
5
6 #ee.Authenticate()
7
8 def project2(project_name,csv_path,raster_path,shapefile_path):
9
10     ee.Initialize(project=project_name)
11     dem = ee.Image('USGS/3DEP/10m')
12
13     table = pd.read_csv(csv_path)
14     table.head()
15
16     ra1 = arcpy.Raster(raster_path)
17     print(ra1.spatialReference.factoryCode)
18
19     gdf = geopandas.GeoDataFrame(table)
20
21     gdf.set_geometry( geopandas.points_from_xy(gdf['X'], gdf['Y'])
22

```

Terminal Output:

```

Learn more: https://developers.google.com/earth-engine/datasets/catalog/USGS_3DEP_10m

warnings.warn(warning, category=DeprecationWarning)
32119
PS C:\Users\Asiha\Documents\Scripts\finals> ^C
PS C:\Users\Asiha\Documents\Scripts\finals>
PS C:\Users\Asiha\Documents\Scripts\finals> c;; cd 'c:\Users\Asiha\Documents\Scripts\finals'; &
'c:\Users\Asiha\.conda\envs\arcpy_clone\python.exe' 'c:\Users\Asiha\.vscode\extensions\ms-python.
debugpy-2025.16.0-win32-x64\bundled\libs\debugpy\launcher' '53150' '--' 'C:\Users\Asiha\Documents
\Scripts\finals\project2.py'
c:\Users\Asiha\.conda\envs\arcpy_clone\Lib\site-packages\ee\deprecation.py:215: DeprecationWarnin
g:

Attention required for USGS/3DEP/10m! You are using a deprecated asset.
To make sure your code keeps working, please update it.
This dataset has been superseded by USGS/3DEP/10m_collection

Learn more: https://developers.google.com/earth-engine/datasets/catalog/USGS_3DEP_10m

warnings.warn(warning, category=DeprecationWarning)
32119
Failed to create file C:\Users\Asiha\Documents\Scripts\finals\boundary.shp: No error
PS C:\Users\Asiha\Documents\Scripts\finals>

```

Breakpoints:

- Raised Exceptions
- Uncaught Exceptions
- User Uncaught Excepti...

Bottom status bar: Ln 9, Col 5 Spaces: 4 UTF-8 CRLF {} Python Finish Setup 3.11.10 (arcpy_clone)

