

# Spatial Programming Lab 4

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(Python scripts for all 4 questions attached with assignment submission)

Question 1 script:

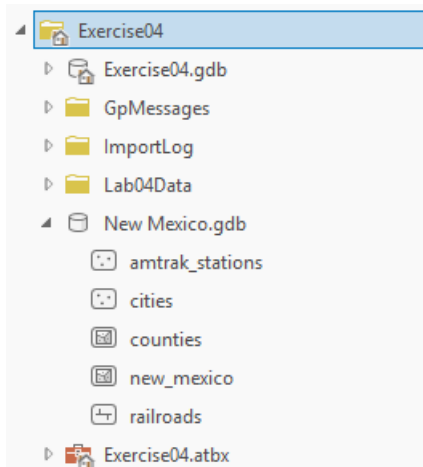
```
# Lab 4 Question 1

import arcpy
import os
arcpy.env.overwriteOutput = True
workspace = "C:/PythonPro/Exercise04"
data_folder = "C:/PythonPro/Exercise04/Lab04Data"
new_gdb = "New Mexico.gdb"
arcpy.CreateFileGDB_management(workspace, new_gdb)
arcpy.env.workspace = data_folder
ftr_classes = arcpy.ListFeatureClasses() #get all feature classes in Lab04Data folder
for fc in ftr_classes:
    fc_name = arcpy.da.Describe(fc)["baseName"]
    new_fc = os.path.join(workspace, new_gdb, fc_name) #copy paths to new gdb
    arcpy.CopyFeatures_management(fc, new_fc) #copy features to new gdb

#Print all feature classes in "New Mexico.gdb"
arcpy.env.workspace = "C:/PythonPro/Exercise04/New Mexico.gdb"
nm_fc = arcpy.ListFeatureClasses()
print("Feature classes in \"New Mexico.gdb\": ")
for fc in nm_fc:
    print(fc)
```

Question 1 output:

```
===== RESTART: C:/PythonPro/Exercise04/ql.py =====
Feature classes in "New Mexico.gdb":
amtrak_stations
cities
counties
new_mexico
railroads
|
```



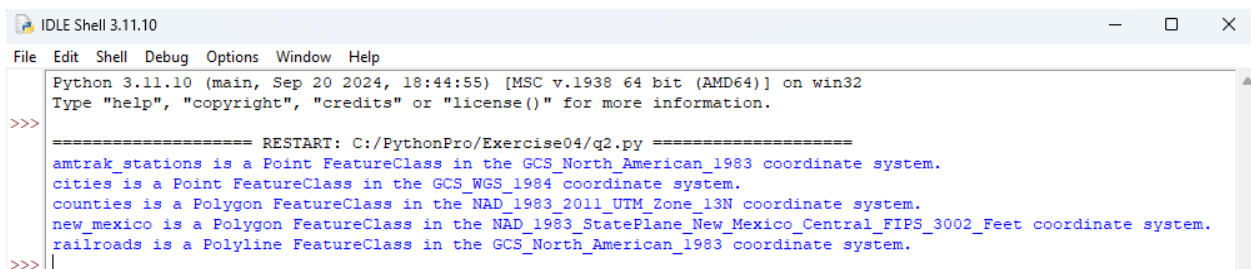
<-- copied files in new New Mexico gdb

## Question 2 script:

```
# Lab 4 Question 2

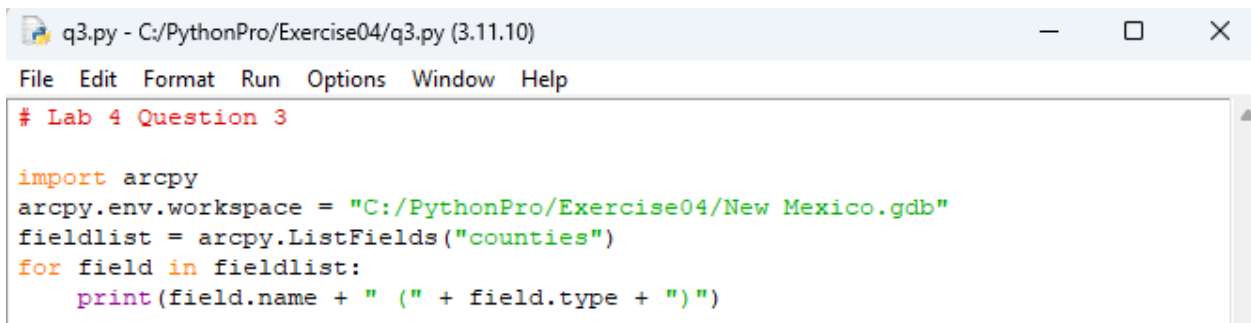
import arcpy
arcpy.env.workspace = "C:/PythonPro/Exercise04/New Mexico.gdb"
fcList = arcpy.ListFeatureClasses()
for dataset in fcList:
    description = arcpy.da.Describe(dataset)
    name = description["baseName"]
    data_type = description["dataType"]
    shape_type = description["shapeType"]
    coord_sys = description["spatialReference"].name
    print(f"{name} is a {shape_type} {data_type} in the {coord_sys} coordinate system.")
```

## Question 2 output:



```
IDLE Shell 3.11.10
File Edit Shell Debug Options Window Help
Python 3.11.10 (main, Sep 20 2024, 18:44:55) [MSC v.1938 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/PythonPro/Exercise04/q2.py =====
amtrak_stations is a Point FeatureClass in the GCS_North_American_1983 coordinate system.
cities is a Point FeatureClass in the GCS_WGS_1984 coordinate system.
counties is a Polygon FeatureClass in the NAD_1983_2011_UTM_Zone_13N coordinate system.
new_mexico is a Polygon FeatureClass in the NAD_1983_StatePlane_New_Mexico_Central_FIPS_3002_Feet coordinate system.
railroads is a Polyline FeatureClass in the GCS_North_American_1983 coordinate system.
>>>|
```

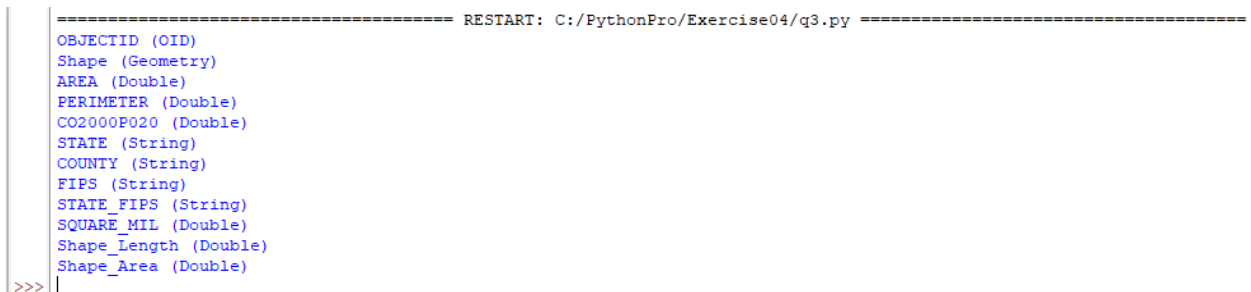
## Question 3 script:



```
q3.py - C:/PythonPro/Exercise04/q3.py (3.11.10)
File Edit Format Run Options Window Help
# Lab 4 Question 3

import arcpy
arcpy.env.workspace = "C:/PythonPro/Exercise04/New Mexico.gdb"
fieldList = arcpy.ListFields("counties")
for field in fieldList:
    print(field.name + " (" + field.type + ")")
```

## Question 3 output:



```
===== RESTART: C:/PythonPro/Exercise04/q3.py =====
OBJECTID (OID)
Shape (Geometry)
AREA (Double)
PERIMETER (Double)
CO2000P020 (Double)
STATE (String)
COUNTY (String)
FIPS (String)
STATE_FIPS (String)
SQUARE_MIL (Double)
Shape_Length (Double)
Shape_Area (Double)
>>>|
```

#### Question 4 script:

```
q4.py - C:/PythonPro/Exercise04/q4.py (3.11.10)
File Edit Format Run Options Window Help
# Lab 4 Question 4

import arcpy
arcpy.env.workspace = "C:/PythonPro/Exercise04/New Mexico.gdb"
feature_count = arcpy.management.GetCount("cities")
print(f"The cities feature class has {feature_count} features.")
```

#### Question 4 output:

```
===== RESTART: C:/PythonPro/Exercise04/q4.py =====
The cities feature class has 487 features.
>>>
```

“The cities feature class has 487 features.”