GIS 6103 Programming for GIS
Assignment 4

Note that in this assignment, changes are not cumulative in one script – you will submit a script for each of tasks 1-4. Total submission will therefore be 4 scripts. As you should see, sometimes a later change removes the need for a previous change so I need to see evidence of each change.

Also note that the line numbers referenced in the tasks refer to the script I supply for each task – as you modify them the line numbers may change. I also indicate the code being referenced to as well <u>so</u> hopefully this should not be a problem.

The data is provided in the a4 zip file as well as the starter scripts for each task.

Task 1

Use the script **_a4task1.py_** for this task.

For this task you will provide explanations of what particular statements or sections of code are doing by providing "comment lines" where indicated in a4task1.py.

Once all your explanations are complete, submit your modified a4task1.py script.

Task 2

Use the script **_a4task2.py_** for this task.

Make the necessary path name changes for the workspace and output locations based on where the data is on your computer. Run the script to make sure these changes work (note that since a lot of buffers are created this may take some time).

Since the changes that you will make to this script can be tested without running the whole script (and this takes time!), you will first comment out the script from line 49 (statement n=1) to the end of the script.

Now, look at lines 32-35 and 43-46:

```
32          i = 0
33    -     for f in fcs:
34              fcs[i] = a+"\\"+ f
35              i = i+1
```

```
43          i = 0
44    -     for f in fdfc:
45              fdfc[i] = a + "\\" + d + "\\" + f
46              i=i+1
```

You will note the similarity of these lines and the same type of change will be applied to both.

Based on your reading of section 12.2 in the text, make these changes so that the code is more 'elegant'.

Verify that your script still works with these edits and then submit your modified a4task2.py script.

Task 3

Use the script *a4task3.py* for this task.

Make the necessary path name changes for the workspace and output locations based on where the data is on your computer. Since you did the same thing in task2 you shouldn't need to verify the script still works – assuming you replaced the paths in exactly the same way!

Since the changes that you will make to this script can be tested without running the whole script (and this takes time!), I have already commented out for you the script from line 49 (statement n=1) to the end of the script.

Now, look at the same lines as the previous task: lines 32-35 and 43-46:

```
32        i = 0                          43        i = 0
33   -    for f in fcs:                  44   -    for f in fdfc:
34            fcs[i] = a+"\\"+ f         45            fdfc[i] = a + "\\" + d + "\\" + f
35            i = i+1                    46            i=i+1
```

Again, the same changes will be made to both code sections.

Based on your reading of section 12.1 in the text, make these changes so that the code is more 'elegant'.

Verify that your script still works with these edits and then submit your modified a4task3.py script.

(Note how these changes obviate the need for the changes you made in task 2.)

Task 4

Use the script *a4task4.py* for this task.

Make the necessary path name changes for the workspace and output locations based on where the data is on your computer. Since you did the same thing in tasks 2 and 3, you shouldn't need to verify the script still works – assuming you replaced the paths in exactly the same way!

You may notice that I 'cleaned-up' this script a little from the original by removing the informative 'print' statements. For this task, we are also going to assume that we know the infolder only contains either file geodatabase workspaces or shapefile folder workspaces, so the 2 original statements that created lists of these types separately (before concatenating them) have now been replaced by one ListWorkspaces() statement (line 9). Other than these changes, the script is the same as the original version.

Now the warning – the changes you about to make are quite a bit more substantial than those made in tasks 2 and 3, and essentially involve a complete re-coding of the script.

For these changes, you will draw on section 12.4 from the text. The vast majority of that section refers to the use of the *os.walk* function to "walk" sub-directories and 'harvest' files for use. If you look at code lines 9-30 in a4task4.py you will realize (hopefully!) that this is what we were essentially doing in an awkward 'long hand' way before. <u>However</u>, the very last paragraph of section 12.4 is critical – it points out that although this *os.walk* function can be used with shapefiles, it cannot be used with file geodatabases, and, of course, we have file geodatabases in our data – darnit! But arcpy has come to the rescue with its own version of this function – arcpy.da.Walk(). The text itself does not discuss it much but it does provide a sample script that uses it – so look at that, and also read the ArcGIS help on this function.

Then, based on this function, see if you can edit a4task4.py to use it. You will end up wholesale replacing a lot of the code that is currently there. Also, there will be an opportunity in your new script to use each of the types of changes you made in tasks 2 and 3 (one instance of each type).

Verify that your script still works with these edits, that it produces all the buffered outputs, and that all the input feature classes now have a field called "Checked".

Submit your modified a4task4.py script.

End of Assignment