

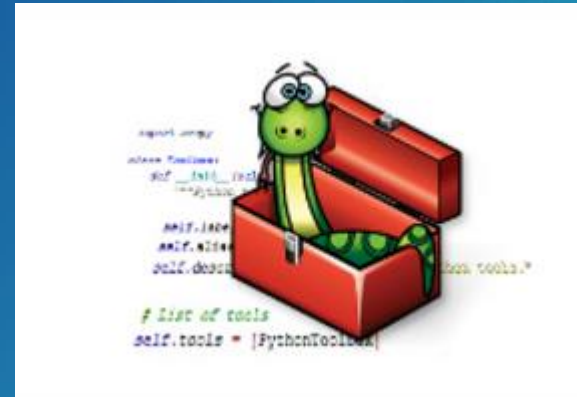
Troubleshooting Python Issues in ArcGIS Desktop

Thomas Jensen

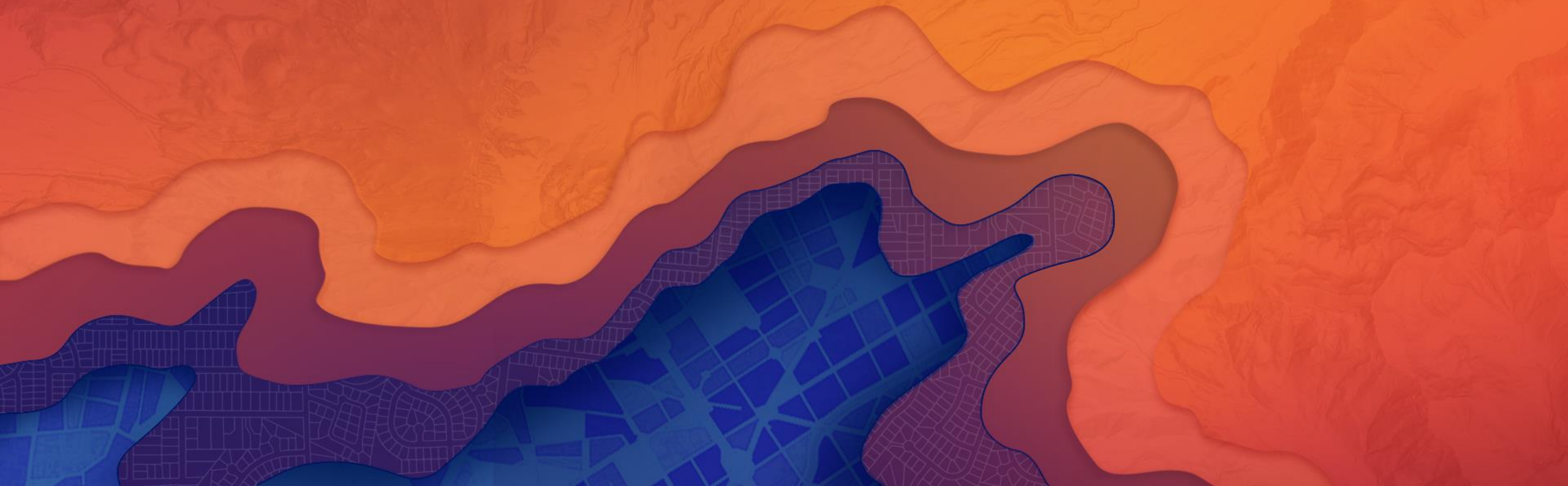
Andrew Johnson

Agenda

- Best Practices/How To
- Troubleshooting Tips

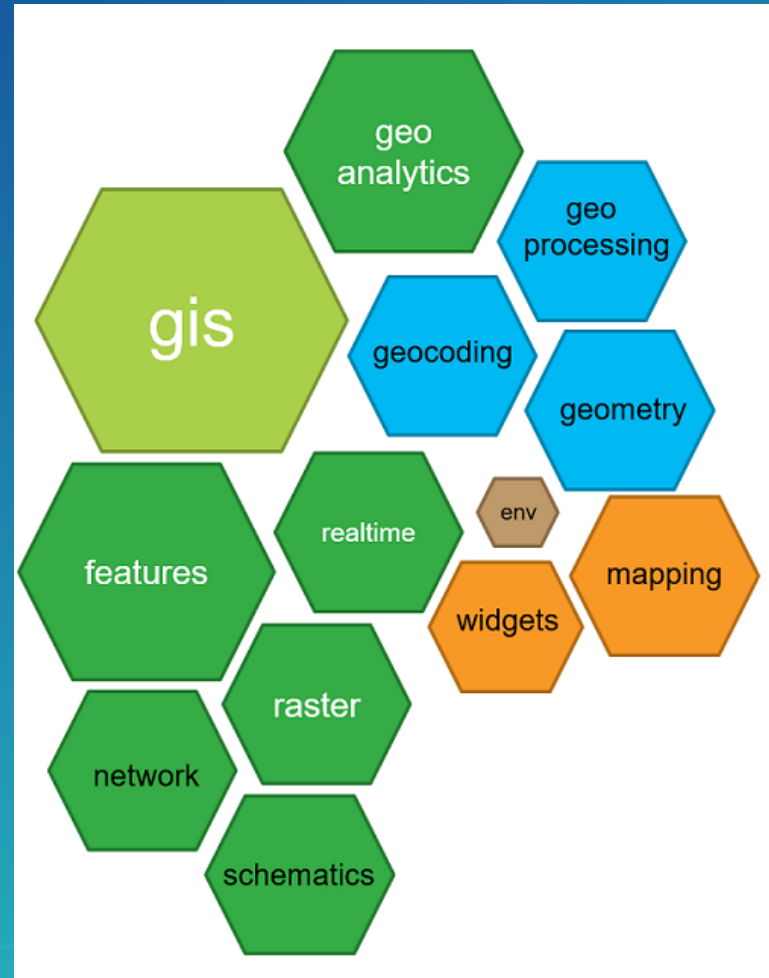


Best Practices



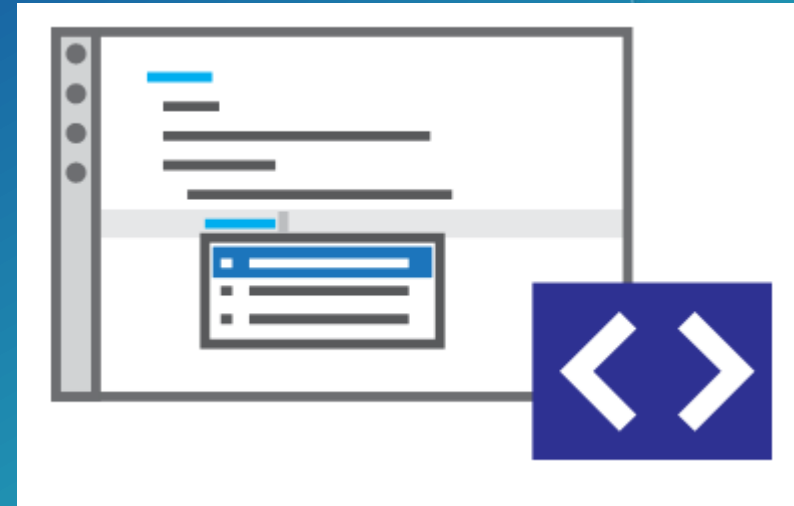
Where to start?

- **Two technologies for scripting and automation**
 - **Arcpy**
 - Desktop based for ArcGIS Pro and ArcMap
 - Windows environment
 - **ArcGIS API for Python**
 - Online/Portal based
 - Windows/Mac/Linux environment



IDE's

- Use preferred IDE
 - IDLE
 - PyCharm
 - Visual Studio
 - Visual Studio Community
 - Visual Studio Code
 - Pyscripter
 - Jupyter Notebook
 - ArcMap/ArcGIS Pro Python Window



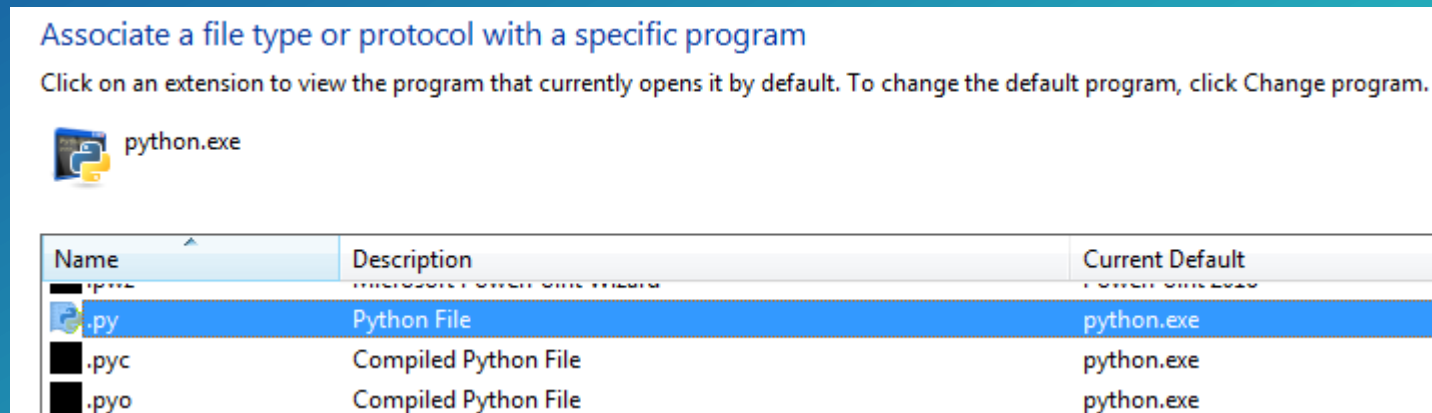
Versions/Compatibility

ArcMap 10.5.1	Background GP	ArcGIS Pro 2.0	ArcGIS Server 10.5.1
2.7.13	2.7.13	3.5.3	2.7.13
32 bit	64 bit	64 bit	64 bit

Versions/ Compatibility

What if I have multiple versions of python on the same machine?

- Run from Command line
 - **C:\Python27\ArcGIS10.x\python.exe C:\Temp\test.py**
- Batch File
 - **C:\Python27\ArcGIS10.x\python.exe C:\Temp\test.py**
- Windows File Associations



Differences between Python 2 and 3

- Arcpy changes
 - (mp module instead of mapping module)
 - Unsupported tools
- Python changes
 - Print function
 - Input() instead of raw_input()
 - Range() instead of xrange()
- Utilities
 - Analyze Tools for Pro
 - Python 2 to 3
 - Recommend writing scripts for Python 3
 - From `__future__` import division

Demo: Python 2 to 3

Analyze Tools For Pro (Data Management Tools)

Completed Today at 8:58:03 AM

Parameters

Input `Z:\UC\AnalyzeTools.py`

Output File

Messages

Start Time: Friday, July 07, 2017 8:57:57 AM

WARNING 001682: Found NOTYETIMPLEMENTED Personal GeoDatabase pGDB.mdb within script Z:\UC\AnalyzeTools.py@24

WARNING 001683: Found Python 2 to 3 errors: Line 18: test = input("Enter value") -> test = eval(input("Enter value")) within script Z:\UC\AnalyzeTools.py

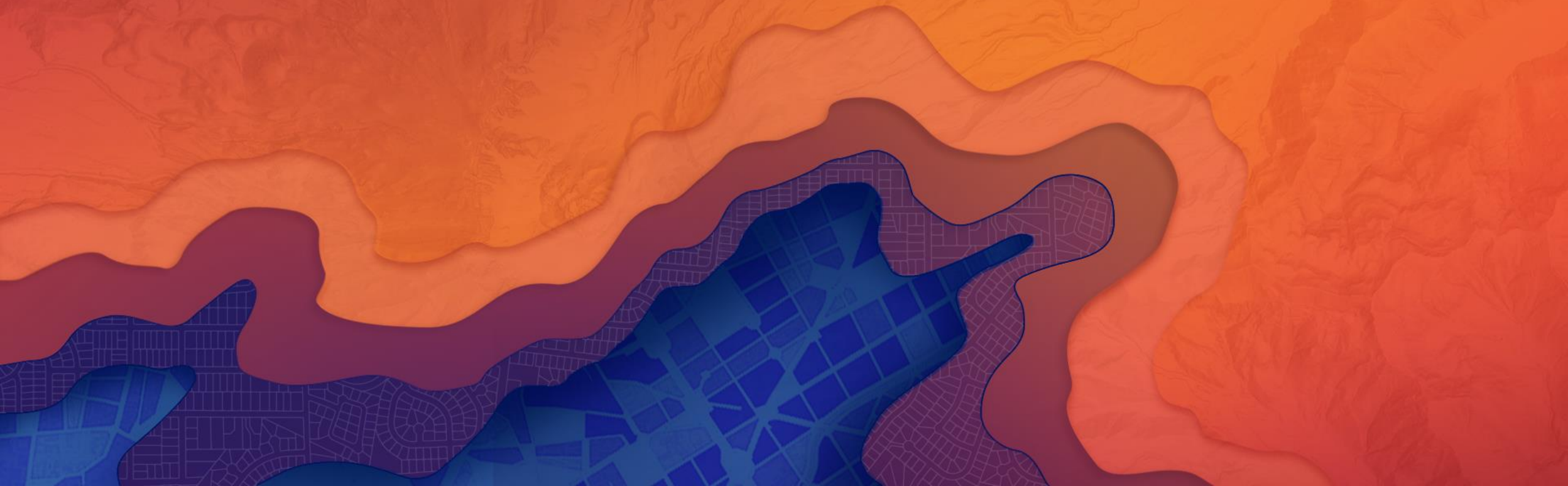
WARNING 001678: Found REMOVED Python method mapping.MapDocument within script Z:\UC\AnalyzeTools.py@20

WARNING 001676: Found NOTYETIMPLEMENTED tool ExportTo3DWebScene_3d within script Z:\UC\AnalyzeTools.py@22

WARNING 001675: Found REMOVED tool CreatePersonalGDB_management within script Z:\UC\AnalyzeTools.py@24

WARNING 001676: Found NOTYETIMPLEMENTED tool PDFToTIFF_conversion within script Z:\UC\AnalyzeTools.py@42

Troubleshooting ArcMap and ArcGIS Pro Environments



Python Installation

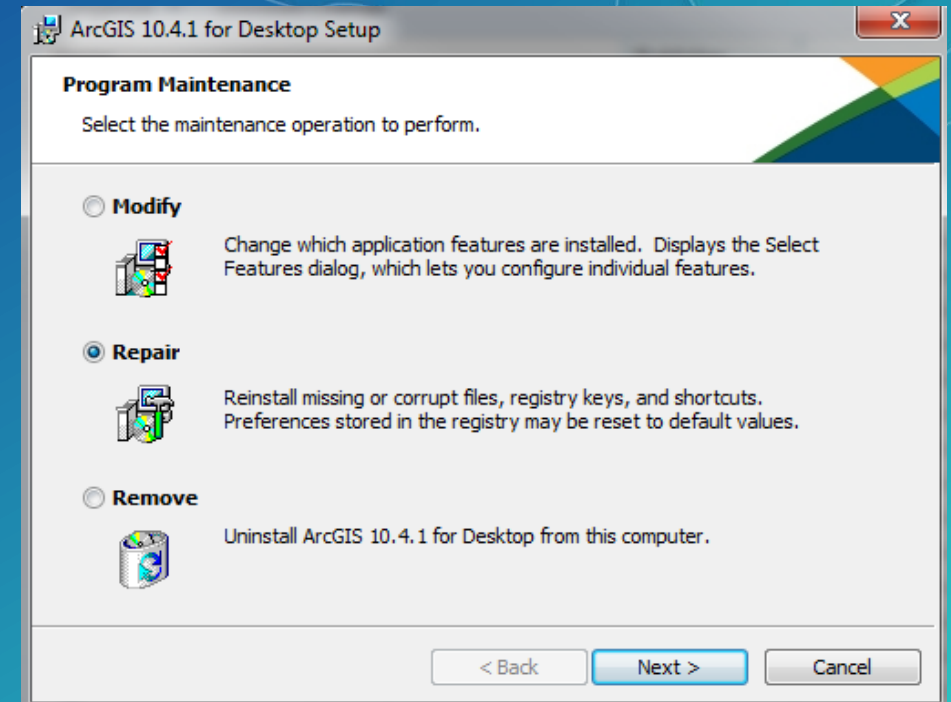
- Possible corrupt python install?

ArcMap

- -Rename C:\python27 and run a repair
- -Python27 folder will be rebuilt

ArcGIS Pro

- C:\Program Files\ArcGIS\Pro\bin\Python\envs\arcgispro-py3
- Rename Python folder and run a repair



Error Importing arcpy

- **Import Error: No module named arcpy**

- **Check python version**

- **Check desktop10x.pth**

```
Traceback (most recent call last):
```

```
File "<interactive input>", line 1, in <module>
```

```
ImportError: No module named arcpy
```

- C:\Program Files (x86)\ArcGIS\Desktop10.x\bin

- C:\Program Files (x86)\ArcGIS\Desktop10.x\ArcPy

- C:\Program Files (x86)\ArcGIS\Desktop10.x\ArcToolbox\Scripts

- **Check environment variable**

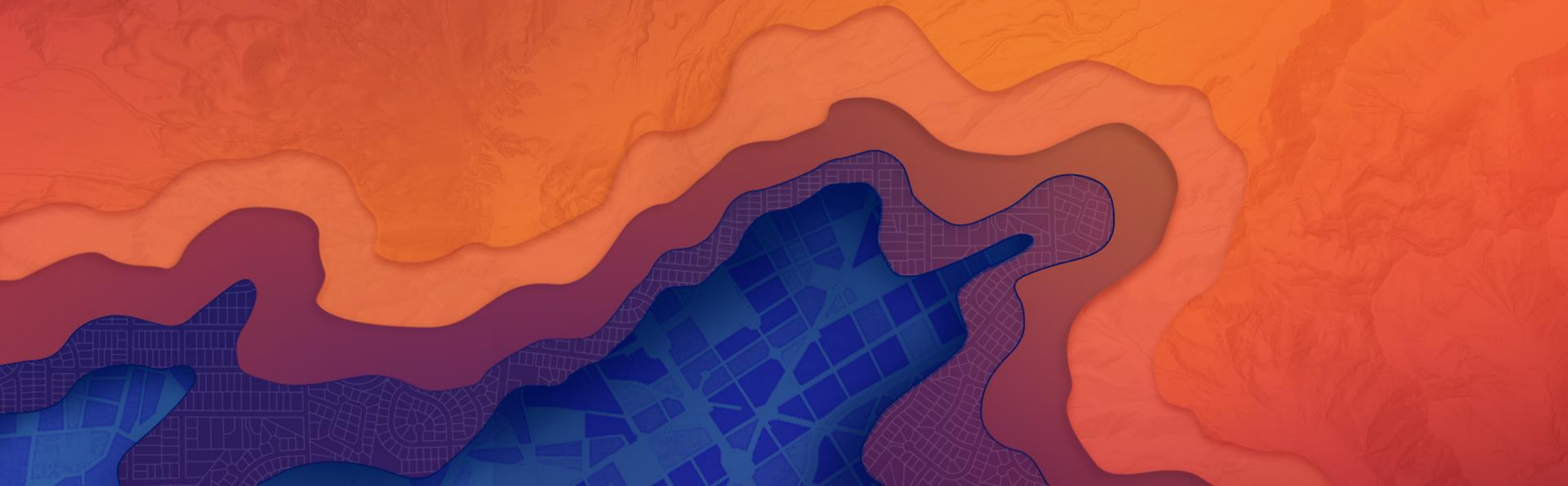
- **Path**

- **PythonPath**

Python Options

- `C:\Python27\ArcGIS10.5\python.exe -v`
 - Prints out the location of the filename or built-in module
- `C:\Python27\ArcGIS10.5\python.exe -E`
 - Ignores all python environment variables (PYTHONPATH, PYTHONHOME)

Demo: Path file and Python verbose



Standalone Script

- Running into an out of memory error?
 - Run in python window in ArcMap
 - Run against 64 bit exe

000426 : Out Of Memory

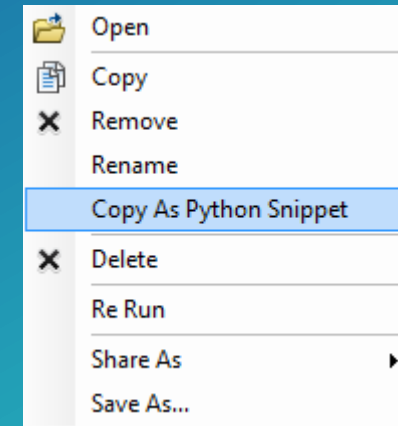
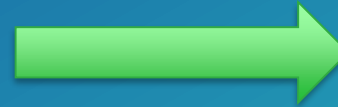
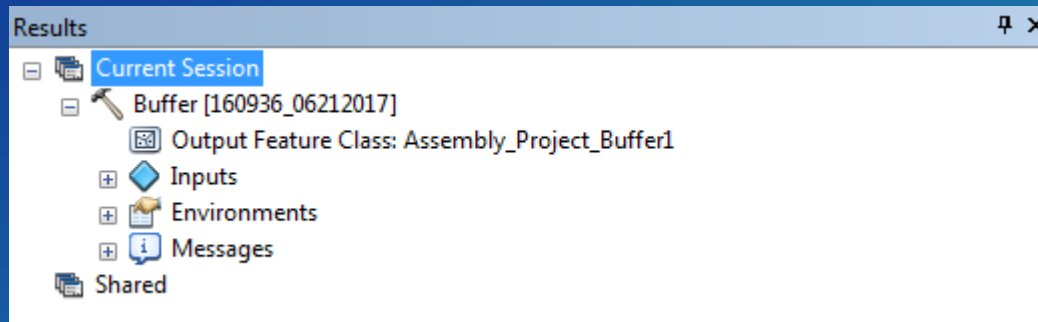
[Resource Center](#) » [Professional Library](#) » [Geoprocessing](#) » [Geoprocessing tool reference](#) » [Tool errors and warnings](#) » Tool errors 1 - 1000

Description

The tool has exhausted the system's available memory and is unable to continue processing.

Syntax Issues?

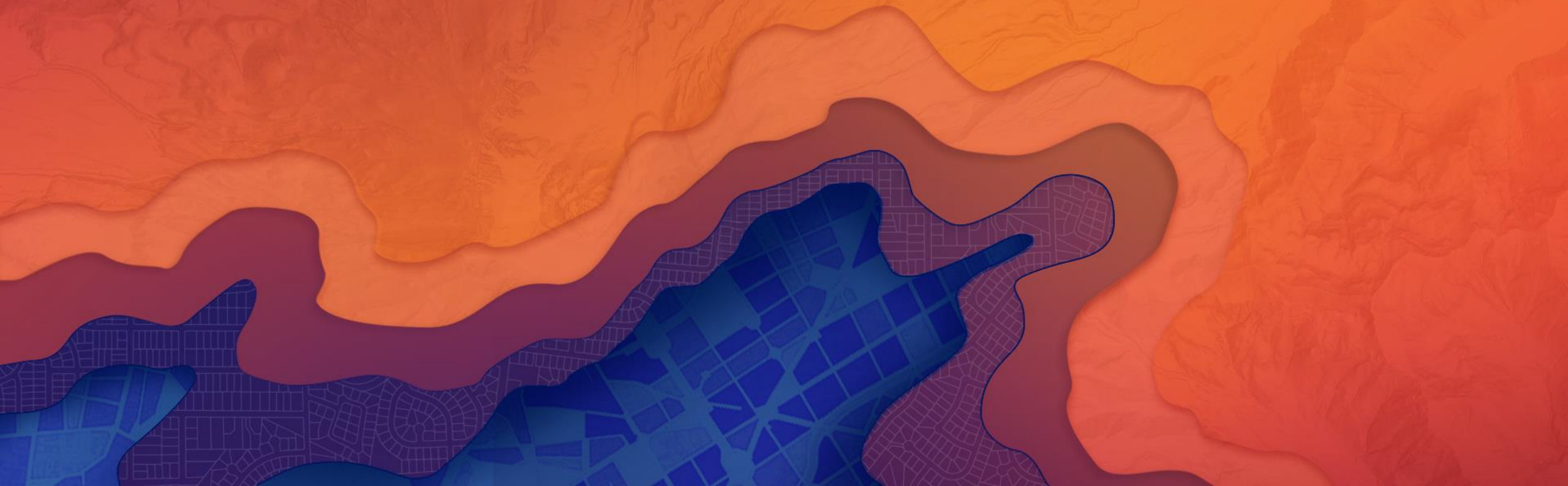
- **Copy as Python Snippet via the Results window**



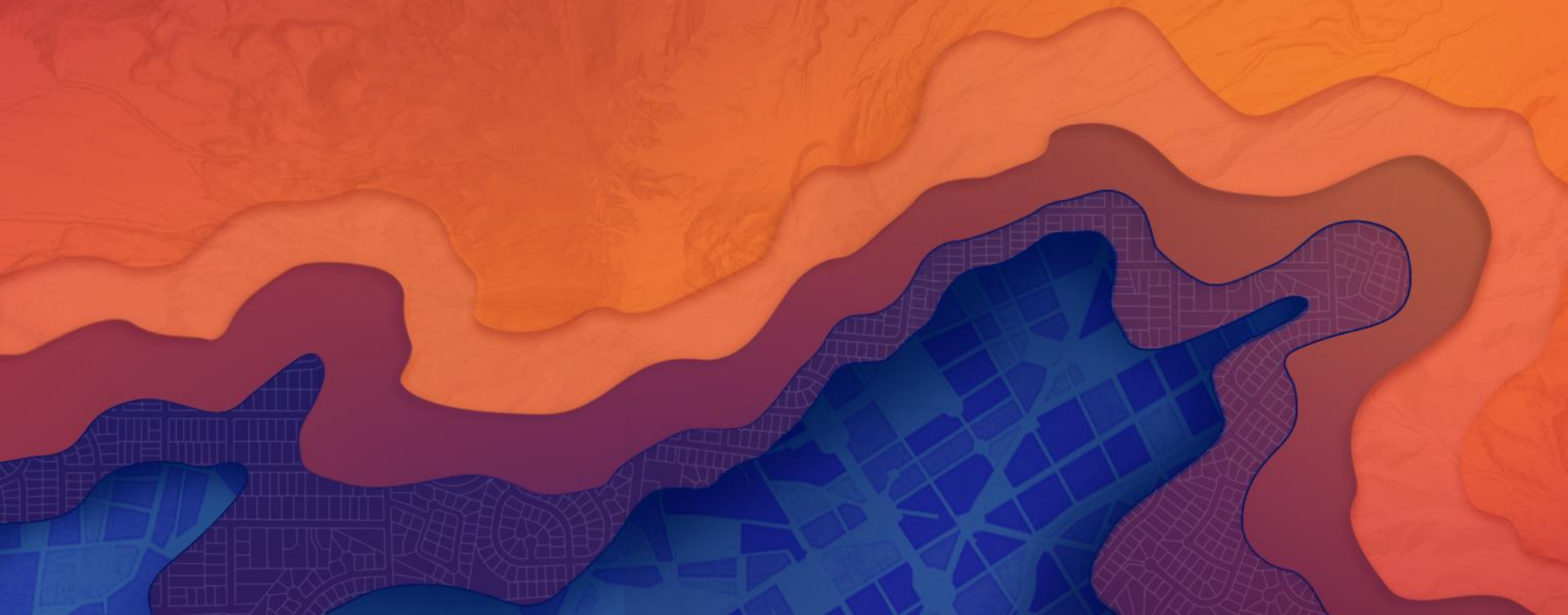
String formatting?

- `Print("your name is {0} and you are {1} years old".format(name,age))`
- `oracle_id = 8`
- `arcpy.SelectLayerByAttribute_management(in_layer_or_view="fclayer",
selection_type="NEW_SELECTION", where_clause="ID = {0}".format(oracle_id))`

Demo: Copy Python Snippet



ArcGIS Pro Python Environment



Python in ArcGIS Pro

- Python has a rich ecosystem of preexisting packages, but managing all of these packages can be a headache, especially when sharing code with others
 - To solve this, ArcGIS Pro leverages Conda, the most popular Python package manager
 - Supports installing third-party libraries associated with a single project rather than into the base Python installation
 - Conda does this by providing isolated Python environments with only the desired packages installed

Python Package Manager

- Interface for managing installed Python packages in ArcGIS Pro's Conda environment

The screenshot shows the Python Package Manager window in ArcGIS Pro. The left sidebar contains a menu with options: New, Open, Save, Save As, Portals, Licensing, Options, Python (highlighted), Add-In Manager, Help, About, and Exit. The main area is titled 'Python Package Manager' and shows the 'Project Environment' set to 'arcgispro-py3'. Below this are three buttons: 'Installed Packages', 'Update Packages', and 'Add Packages'. The 'Installed Packages' section shows a list of 88 installed packages. The 'alabaster' package is selected, and its details are shown on the right, including its version (0.7.8), homepage, license (BSD), and description.

Python Package Manager

Project Environment: `arcgispro-py3`

Installed Packages

The following list of Python packages are installed with ArcGIS Pro.
[Learn more about Conda packages](#)

Installed: 88

Name	Version
alabaster	0.7.8
anaconda-client	1.4.0
anaconda-navigator	12.2
astroid	1.4.9
babel	2.3.3
bzip2	1.0.6
chardet	2.3.0
clyent	1.2.2
colorama	0.3.7
cycler	0.10.0
decorator	4.0.10
docutils	0.12
entrypoints	0.2.2
freetype	2.6.3
future	0.16.0
imageio	0.7.1
ipykernel	4.5.0
ipython	5.1.0
ipython_genutils	0.1.0

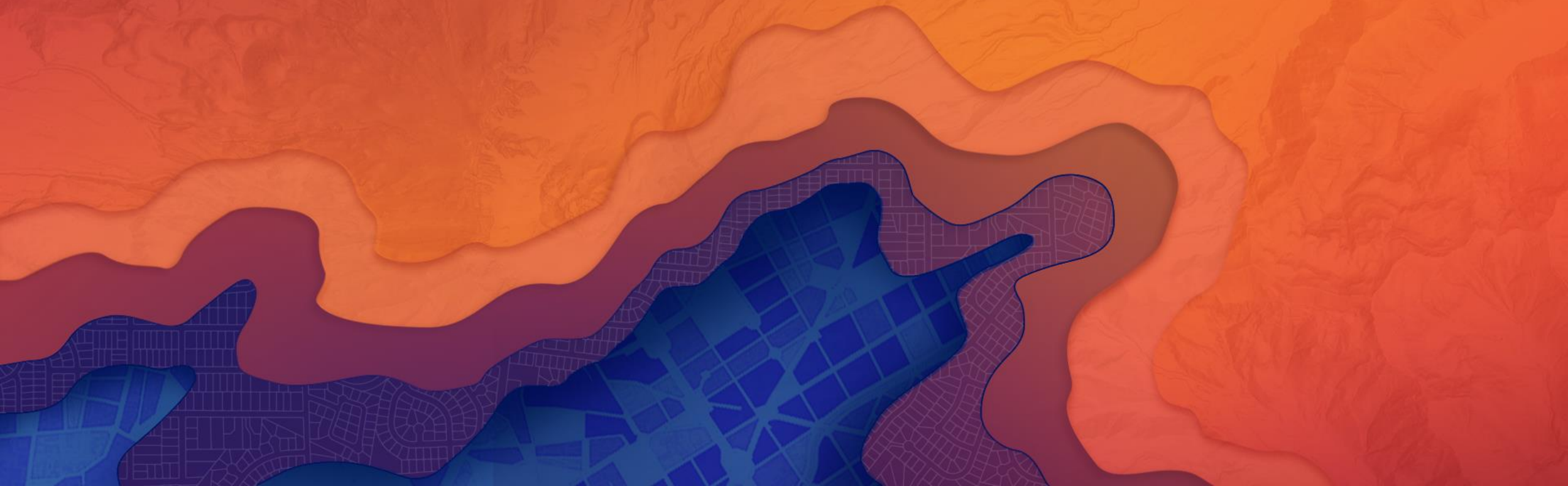
alabaster Uninstall

Version: 0.7.8
Configurable, Python 2+3 compatible Sphinx theme

[Homepage](#) License: BSD

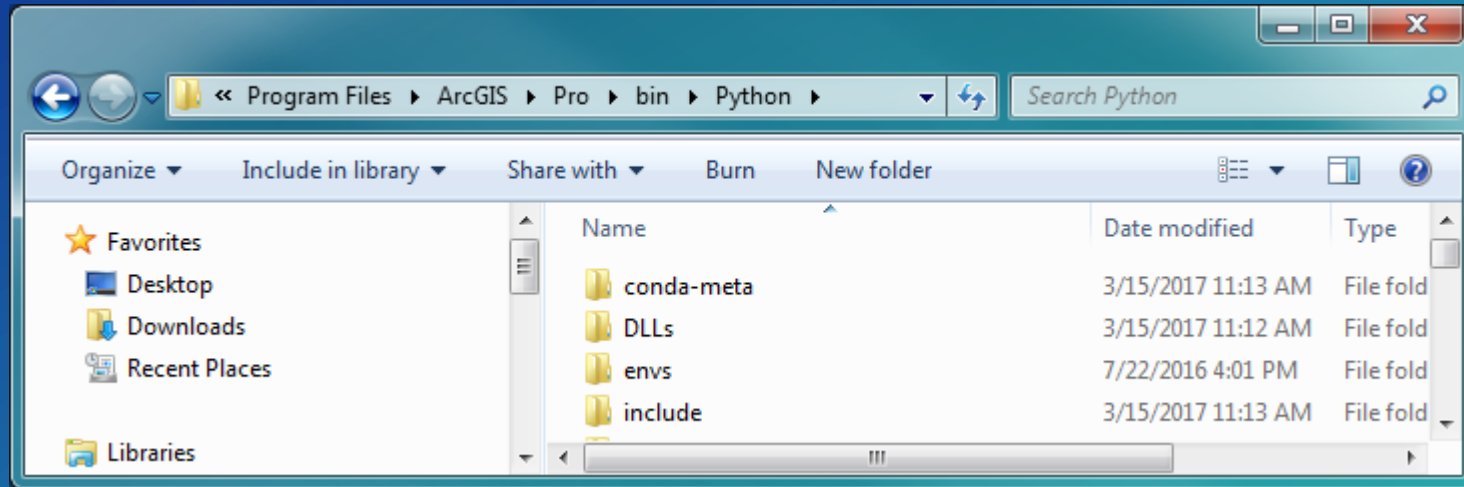
Description
Alabaster is a visually clean, responsive, and configurable Sphinx theme. It is sidebar-enabled and easy to install/use as a Python package. As of Sphinx 1.3, Alabaster is selected as the default theme for Sphinx.

Demo: Python Package Manager



Python, Conda, and ArcGIS Pro

- ArcGIS Pro installs a conda-based Python environment into Pro's install folders



Running Python scripts for Pro

- A script that used to work now fails?
 - Use propy.bat to run the script, not the python34.exe from earlier versions of Pro
 - Use "c:\Program Files\ArcGIS\Pro\bin\Python\scripts\propy.bat" my_script.py
 - Instead of "c:\python34\python.exe" my_script.py
 - Propy.bat includes all the packages actively being used by ArcGIS Pro (those installed in the Package Manager), whereas python34.exe does not.
 - Note! Propy.bat requires Admin privileges

Stuck?

Self help

- Check your syntax
- Move data to local folder
- Use print statements
- Geonet, StackExchange, GitHub
- ArcScripts
 - [Codesharing.arcgis.com](http://codesharing.arcgis.com)

Ask Esri for help

- Simplest testable case
- Create GP package in ArcMap (for script tools)
- What error message? On what line?

Additional UC Sessions

- **ArcGIS Python API: Introduction to Scripting your Web GIS - Wednesday July 12**
 - **10:15am-11:30am Sapphire Ballroom M**
- **Python: Arcpy Tips and Tricks - Wednesday July 12**
 - **1:30pm-2:15pm SDCC Demo Theater 07**
- **Python: An Introduction -Thursday July 13**
 - **1:30pm-2:45pm SDCC Room 4**
- **Working with Python in ArcGIS Pro - Thursday July 13**
 - **10:00am-10:30am SDCC Tech Theater 19 Exhibit Hall A**



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