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Getting Started with the ArcGIS API for Python and Jupyter Notebooks

Course Length: 2 days
App: Jupyter Notebook

Overview

The ArcGIS Application Programming Interface (API) is a Python library that allows GIS visualization and analysis, data management, and system administration via Python scripts. The library is free to download but requires ArcGIS Online or ArcGIS for Portal access to create the GIS object, which is the core of the API library. Jupyter notebooks is an application that provides a place to write scripts (an IDE), as well as a way to visualize results from the script (text, tables, charts, maps, and scenes), and a way to document the script and the results. Notebooks can be shared easily. This course introduces the ArcGIS API by writing and running scripts in Jupyter Notebooks and Jupyter Labs. This course builds on the Python for ArcGIS – Writing Scripts to Manipulate GIS Data TeachMeGIS class, and assumes you have the basic Python skills taught in that course (creating variables, looping, conditional statements, reading and writing to/from files).

Audience

This course is for those who are already comfortable with the basics of writing Python scripts in ArcGIS using arcpy and want to learn how to write Python scripts to manipulate web maps and services using the ArcGIS API, Jupyter Notebooks, and Jupyter Labs.

Topics Covered

Day 1

- Introduction to the ArcGIS API and Jupyter Notebooks – An overview of scripting in the ArcGIS Enterprise (Where Does the ArcGIS API Fit into the ArcGIS Development Environment?; The Components of the Python 3.x Development Environment in ArcGIS Pro; Jupyter Notebooks and Jupyter Labs; A Quick Tour of the ArcGIS API for Python in Jupyter Notebooks)
- Introduction to Jupiter Notebooks and Jupyter Labs – The Jupyter Notebooks and Jupyter Labs Interfaces. (Creating and Saving Notebooks; Notebooks File Management; Understanding Checkpoints; The Kernel; Writing and Running Code in Cells, and Cell Management; The Different Cell Types; Using Markdown to Document Your Notebook; Understanding Widgets; Keyboard Shortcuts)
- The ArcGIS API Object Model – Understanding the Most Commonly Used Objects (The ArcGIS Class Groupings; Navigating the Help; Instantiating the GIS Object, Connecting to a Portal)
- Mapping and Visualization – Writing Scripts that Create and Manipulate Web Maps. (Using the Map Widget; Searching the GIS for Layers; Accessing Layers from Feature Services; Querying Feature Layers; Working with Feature Sets and Feature Collections; Analyzing Patterns in Layers (Working with Renderers)

Day 2

- Working with Feature Layers – (Reading and Updating Layer Properties (Represented in Python Dictionaries); Accessing Feature Geometry; Simple Edits to Geometry; Summarizing Data)
- Geoprocessing with Python – Calling Geoprocessing Tools. (Tools Built into the ArcGIS API; Calling Tools; Understanding Tool Input and Output; Dealing with Multiple Inputs; Common Tools)
- AGOL and Portal for ArcGIS Administration with Python Scripts – Managing Users, Groups, and Content. (The gis.admin Module; Accessing and Managing Groups and Users; Properties of Your GIS; Managing Content;)

Format

In-person instruction with hands-on practice and course materials you can keep.

Prerequisites and Recommendations

Attendees should be familiar with creating maps in ArcGIS Online or Portal for ArcGIS, and also know how to write basic Python scripts, including the topics covered in the **Python for ArcGIS – Writing Scripts to Manipulate GIS Data** TeachMeGIS class.