

EXERCISE 3

ArcGIS Pro -Map Series: Create Map Books

Introduction

In this exercise the student will learn how to build both grid and strip map index layers to be applied with Map Series.

Objectives

- Organize a map book using python code
- Assemble and export a map book complete with map pages and extra documents

Required Data:

- ArcGISProMapSeries.zip downloaded and unzipped to your workspace.

Prerequisites

- Install ArcGIS – Pro 2.9 or greater
- Have completed the GTAC ArcGIS Pro – Quick Start class or have equivalent experience.



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Part 1: Investigate the Map Book Documents

You have been asked to create an electronic map book of the San Bernardino National Forest where each quad boundary is on a different page. The maps have already been produced through Map Series and now you must organize the map series document with extra documents to create the requested map book product.

1. Look at the supplied documents.
 - a. In Windows Explorer, navigate to ...\\ArcGISProMapSeries\\Data\\Map_Book_Files and open the folder. You should see the following documents within:
 - Title Page
 - Legend Page
 - Quad Index Page
 - Map pages that have been created via Map Series, e.g., SBNFmaps.pdf

The order that the files are listed here is the order they will need to be assembled in the final map book product.

After going through the documents, how many pages should we expect the final map book document to be?

3	11	44	75
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Part 2: Open the Python Window

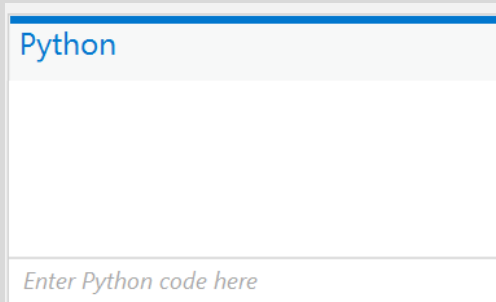
1. Start ArcPro

- a. Open Pro_MapSeriesProject if it isn't already.

1. Open the Python window

- a. On the **Analysis** tab (**Geoprocessing** group), go to the **Python** menu and select **Python Window**.
- b. The Python window will open below the map viewer.

When initially opened, the Python window includes prompt and transcript sections. The prompt is at the bottom of the window, where code is written and entered. The transcript is above the prompt and provides a record of previously entered Python code. It is initially blank. In Python, tools, functions, and classes all store helpful information. When using a geoprocessing tool, help information can be accessed by positioning the pointer within the round brackets following the name; the window will provide the syntax and the help for the current parameter. In addition, the help topic for any geoprocessing tool can be accessed by clicking the help button .



The process of creating complete map books uses a script for the ArcPy Mapping Module. ArcPy is a Python site-package that provides access for all geoprocessing tools, in addition to a variety of useful functions for working with map documents (.mxd) and GIS data.

Part 3: Enter and Run Python Script

Now you will enter and run the provided script line by line within the Python window. Remember that syntax within this code is extremely important and every letter and special character must be precise.

1. Enter script (line by line)

PLEASE ADVISE: The code that you enter in Step 1a is specific to a location on your C drive, Citrix workspace, etc... If you downloaded the data to another location, you will need to change the path name to reflect the proper directory (aka path). Please ask the instructor for help if you get an error.

- a. In the code area, just after the primary prompt, enter the following code: *(copy from below and paste)*

```
outdir = r"  
C:\Users\markhammond\Desktop\ArcGISProMapSeries\ArcGISPro  
MapSeries\Data\Map_Book_Files"
```

This script sets an output directory variable named 'outdir' to the pathname you see within the code.

- c. Press Enter. (When the primary prompt appears on the next line that means the process for that particular part of the script is completed.)
- d. Next, same as before, enter the following code:

```
finalPDF = outdir + r"\SBNF_MapBook.pdf"
```

This script sets an output file variable named 'finalPDF' and sets the directory where it will be placed.

- e. Press **Enter**.
- f. In the code area, just after the primary prompt TYPE the following code:

```
print(finalPDF)
```

*(**NOTICE:** As you type, lists of functions or variables appear in the Python window. This is called **intellisense**. Refer to the information bubble below for more details.)*

This script tells Python to list out the directory path of the final map product. It should include: **...ArcGISProMapSeries\Map_Book_Files\SBNF_MapBook.pdf**. (You will have a different pathway if your data is stored in a different location.)

What is **intellisense**? As you start to type a variable name that has already been assigned or a Python function, you can double click on or hit the Tab key with the appropriate value selected in the menu that appears to help the process of entering code go faster.

- g. Press **Enter**.
- h. Next, enter the following code:

```
mapBookPDF=arcpy.mp.PDFDocumentCreate(finalPDF)
```

This script creates a new/empty PDF document that has a variable name of 'mapBookPDF'. The variable finalPDF is telling Python where to place the new PDF document. The next lines of code will then populate the new document with the pages that you want to include in the final map book.

- i. Press **Enter**.

EXCHANGES:

Each time you run this code, you may have a different name for some of the output paths, or variables. An important thing to remember when altering the code is to make sure that if you change a name in one place, you change it in all the pertinent places throughout the script. The lesson slides have been color coded to show you which variables are common across the code.

If you get an error message, chances are that the path you assigned to the **outdir** variable doesn't exist. Remember, the path name you enter in **Step 1a** must point to where your course data is located. Please ask the instructor for help if needed.

- j. Next, enter the following code:

```
mapBookPDF.appendPages(outdir + r"\TITLE.pdf")
```

This script tells Python to append the first page (Title Page) into the PDF document you created in the line before, SBNF_MapBook.pdf, which was coded for by the variable 'finalPDF'.

- k. Press **Enter**.

- l. Enter the following code:

```
mapBookPDF.appendPages(outdir + r"\LEGEND.pdf")
```

This script tells Python to append the second document, the Legend page, into the new SBNF_MapBook.pdf.

- m. Press **Enter**.

- n. Enter the following code:

```
mapBookPDF.appendPages(outdir + r"\QUAD_INDEX.pdf")
```

This script tells Python to append the third document, which is the Quad Index, into the new SBNF_MapBook.pdf.

- o. Press **Enter**.

In this exercise, you have entered the code line by line. The purpose of stopping after each step is so you can learn what each bit of code means. However, once you have code that has been tested you can paste it all at once into the Python Window, hit enter, and each line will run concurrently.

p. Enter the following code:

```
mapBookPDF.appendPages(outdir + r"\SBNFmaps.pdf")
```

This script tells Python to append the fourth, and in this case final, document (the map pages that were generated by Map Series) into the new SBNF_MapBook.pdf.

q. Press **Enter**.

Be advised that the process of appending the SBNFmaps.pdf will take a while since there are many pages within the one document. Do not be alarmed if it takes a few minutes for the primary prompt to reappear on the next line. It's ok if you get the following message
`PdfReadWarning: Xref table not zero-indexed. ID numbers for objects will be corrected. [pdf.py:1736]`

r. Enter the following code:

```
mapBookPDF.updateDocProperties (pdf_title = "San Bernardino  
NF Quad Map Book", pdf_layout = "ONE_COLUMN")
```

This script will give the SBNF_MapBook.pdf a title within the document properties, and set a single column format when viewed in a PDF reader program (i.e. Adobe Acrobat).

s. Press **Enter**.

t. Enter the following code:

```
mapBookPDF.saveAndClose()
```

This script will save and close the newly created and populated pdf final map book product.

u. Press **Enter**.

v. Enter the following code:

```
del mapBookPDF
```

This code will delete the variable mapBookPDF from the code history.

The **del** code is optional. It is good practice to delete all the variables before reassigning them to another value upon rerunning the script in the same ArcPro session. If you close out of whichever ArcPro program you are working in, then all of the code history is removed and no variables will be remembered from previous sessions.

w. Press **Enter**.

2. Close ArcPro

Part 4: View Final Map Product

The last task to be completed is to verify that the new map book document was assembled properly.

1. Examine the SBNF_MapBook.pdf

- a. In Windows Explorer, navigate to the ...**Data\Map_Book_Files** folder and double click on the **SBNF_MapBook.pdf**
- b. **Explore** the map book.

How many pages make up SBNF_MapBook.pdf?

3

11

44

75

Does this number match the answer to the first question (on page 2)? It should!

There should be 44 pages in the final map book product

- c. When finished, **close** out of the **document**.

-END OF EXERCISE