

Everything is better with friends: Executing SAS code in Python scripts with SASPy

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Hands-on Workshop ♦ 29 April 2019 ♦ 13:30 to 15:00

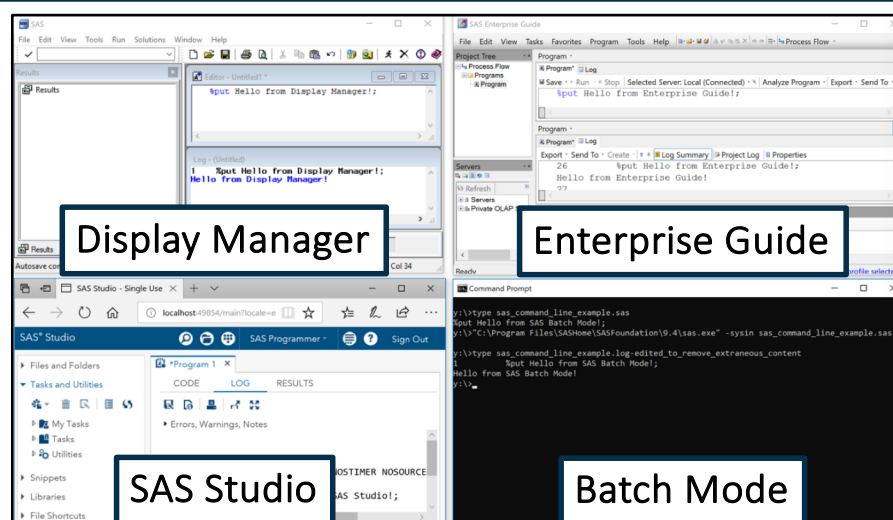
USERS PROGRAM

Workshop files: <https://github.com/saspy-bffs>

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SAS System V9 Interfaces



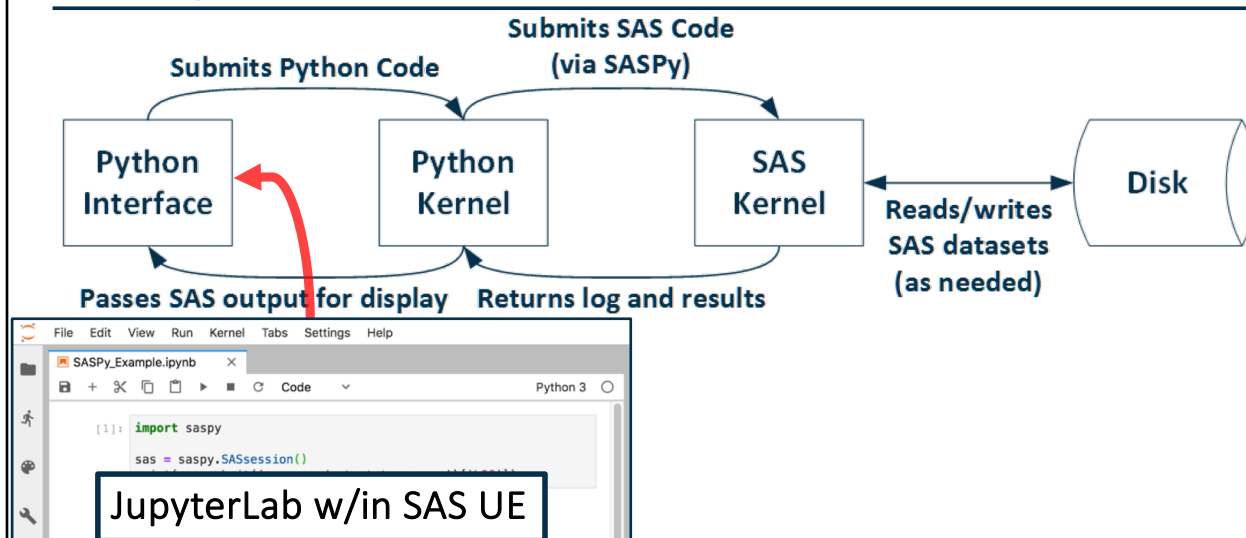
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SASPy Architecture



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Best of Both Worlds

saspy = **sas** + **python**

Strengths

Data Analysis
Data Management
Statistics

Strengths

Scripting
Web Dev
ML/DL

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Code Vignettes

Examples 0-5

- Python modules and imports
- Python syntax and object types (e.g., `str`, `list`, `dict`, and `DataFrame`)

Examples 6-9

- Establish SAS Sessions
- Manipulate SAS datasets

Examples 10-12

- Interact directly with SAS Sessions and datasets

- Use Python to learn SAS

Extra Credit Examples

- Jupyter magic commands
- Use Python to imitate the SAS Macro Facility

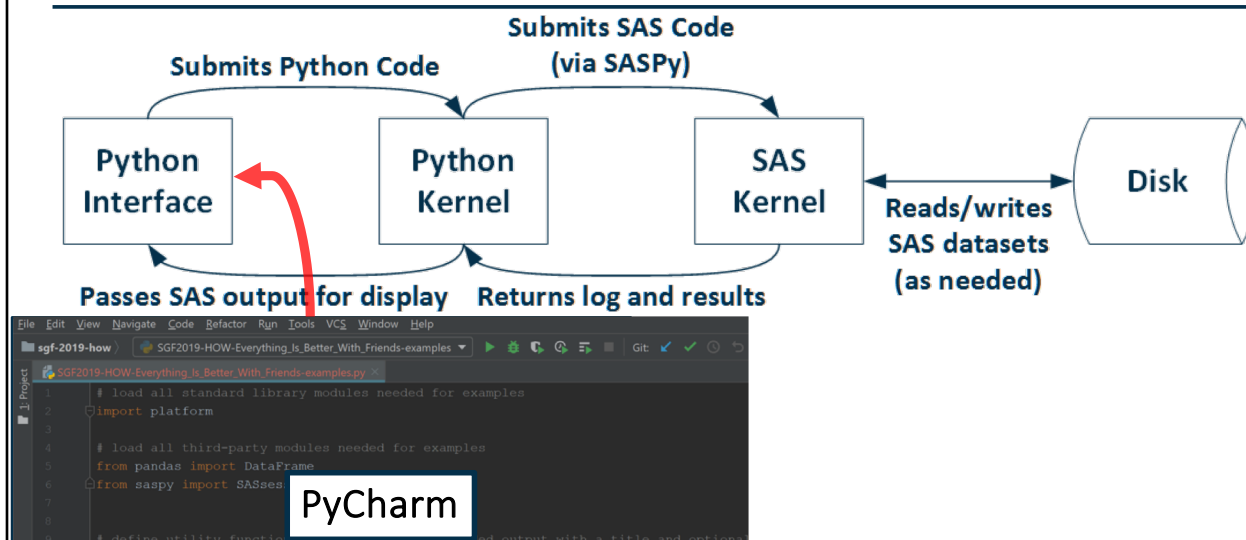
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Take the SASPy Challenge! (Handout, page 2)

Base SAS® Software

Overview

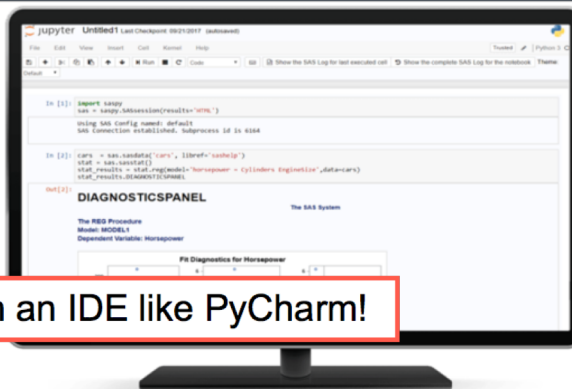
Learn

Support

Request demo

Get SAS® into the hands of more users.

Base SAS lets you incorporate Hadoop capabilities – including Pig and Hive languages and MapReduce – as well as apply them across all SAS products and solutions. In addition, Python programmers can access Base SAS capabilities in a Python console notebook using the SASPy library, an open source extension available on GitHub.



... or in an IDE like PyCharm!

https://www.sas.com/en_us/software/base-sas.html

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Call to Action!

During SGF

- Rate this session in the SGF App (AttendeeHub)
- Attend other SASPy talks
- Read Paper 3189-2019: *Everything is better with friends: Executing SAS code in Python scripts with SASPy*

After SGF

- Use handout to replicate workshop examples/demos
- *A Whirlwind Tour of Python*
- Contact us:

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 Matthew.T.Slaughter@kpchr.org

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Demo 1 Screenshot (See Handout, page 2)

```

File Edit View Navigate Code Refactor Run Tools VCS Window Help
SGF2019-HOW-Everything_Is_Better_With_Friends-examples
SGF2019-HOW-Everything_Is_Better_With_Friends-examples.py x
Project Y:\sgf-2019-how
  library root
  gitignore
  LICENSE
  README.md
  requirements.txt
  sascfg_personal.py
  sascfg_personal-example.py
  SGF2019-HOW-Everything_Is
  SGF2019-HOW-Everything_Is
  SGF2019-HOW-Everything_Is
  SGF2019-HOW-Everything_Is
  External Libraries
  Scratches and Consoles
1 # load all standard library modules needed for examples
2 import platform
3
4 # load all third-party modules needed for examples
5 from pandas import DataFrame
6 from saspy import SASsession
7
8
9 # define utility function to print linebreak-padded output with a title and optional line of 80 stars afterward
10 def print_with_title(output, title='', linebreaks_before=2, linebreaks_after=2, put_stars_after=True):
11     print('\n' * linebreaks_before + title + '\n' * 2, output, '\n' * linebreaks_after, sep='')
12     if put_stars_after:
13         print('*' * 80)
14
15
16 # only proceed if this file is executed directly
17 if __name__ == '__main__':
18
19     # Example 0. Print Python version number
20     print_with_title(platform.sys.version, 'Python version being used:')
21

```

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Demo 2 Screenshot (See Handout, page 2)

```

File Edit View Navigate Code Refactor Run Tools VCS Window Help
dataset-explorer app.py
Project Y:\dataset-explorer
  sas_output
  templates
  library root
  .gitignore
  app.py
  LICENSE
  README.md
  requirements.txt
  sascfg_personal.py
  sascfg_personal-example.py
  External Libraries
  Scratches and Consoles
1 from datetime import datetime
2 from pathlib import Path
3
4 from flask import Flask, render_template, request
5 from saspy import SASsession
6
7 sas_output_dir = Path('sas_output')
8 app = Flask(__name__, static_folder=sas_output_dir)
9 response_contents = {
10     'directory': '',
11     'directory_list': [],
12     'dataset': '',
13     'iframe_filename': '',
14     'error': ''
15 }
16
17 sas = SASsession()
18 SAS_COMMANDS = {
19     'run proc contents': 'proc contents order=varnum data=temp_lib.%s; run;',
20     'run proc freq': 'proc freq nlevels data=temp_lib.%s; tables _CHAR_ ; run;',
21     'run proc means': 'proc means maxdec=2 data=temp_lib.%s; run;',
22 }
23

```

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