Printing from Colab

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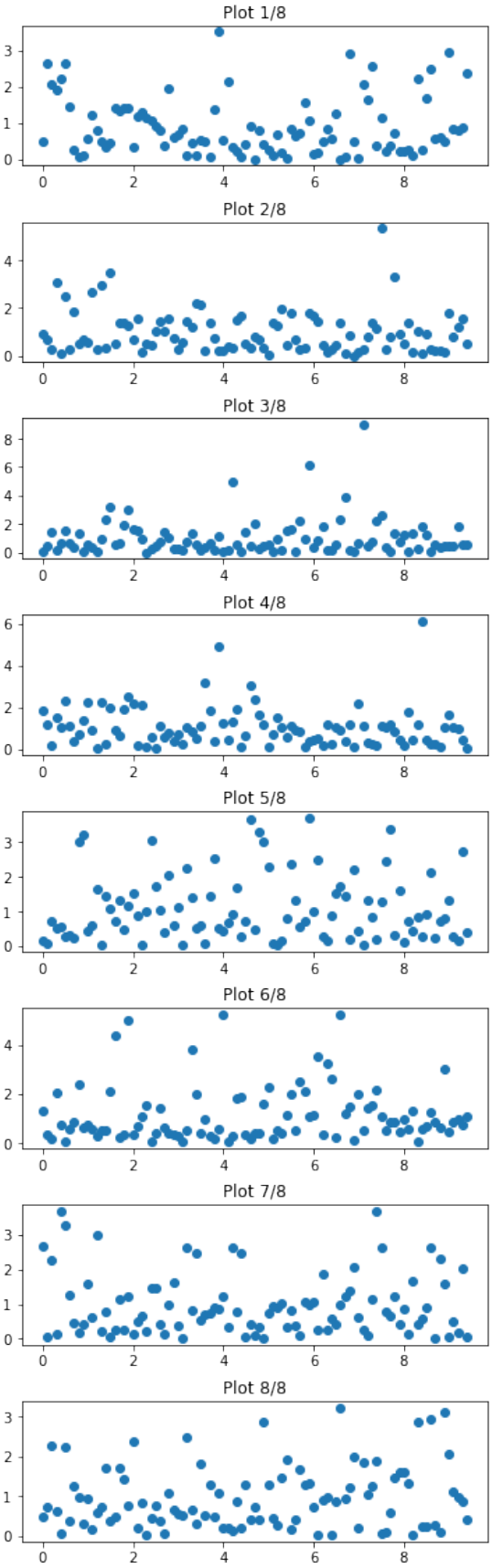
Printing from Colab seems easy - there's a File > Print option in the menu! However, the built-in print option won't always work well for us, because if a plot or other output happens to come out near a page break, it can get cut off.

For example, try running the following cell, which creates a large plot:

```
import numpy as np
import matplotlib.pyplot as plt


x = np.arange(0, 3 * np.pi, 0.1)

# set up figure and subplots
plt.figure(figsize=(6, 20))
plt.subplot(8, 1, 1)

# plot random data
for p in range(1,8+1):
  y = np.random.exponential(size=len(x))
  plt.subplot(8, 1, p)
  plt.scatter(x, y)
  plt.title('Plot %d/8' % p)

# adjust spacing between subplots
plt.subplots_adjust(hspace = 0.4)

# show the figure.
plt.show()
```


Plot 1/8
Plot 2/8
Plot 3/8
Plot 4/8
Plot 5/8
Plot 6/8
Plot 7/8
Plot 8/8

Then, look at the preview PDF output using File > Print, and note how some of the subplots do not appear in the PDF output.

As an alternative to Colab's built-in print, you can use this notebook to generate a PDF version of any Colab notebook that is saved in your Google Drive.

Step 1: Prepare the source notebook

Make sure the notebook that you want to print is ready:

- you ran the cells in the notebook (in order! and their output is visible in the notebook
- it is saved in your Google Drive

Step 2: Install software and libraries

In *this* notebook, run the following cell:

```
!apt-get install texlive texlive-xetex texlive-latex-extra pandoc
!pip install pypandoc
```

```
E: Could not open lock file /var/lib/dpkg/lock-frontend - open (13: Permission denied)
E: Unable to acquire the dpkg frontend lock (/var/lib/dpkg/lock-frontend), are you root?
Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: pypandoc in /home/ffund/.local/lib/python3.8/site-packages
    (1.5)
Requirement already satisfied: setuptools in /usr/lib/python3/dist-packages (from pypandoc)
    (45.2.0)
Requirement already satisfied: wheel>=0.25.0 in /usr/lib/python3/dist-packages (from
    pypandoc) (0.34.2)
Requirement already satisfied: pip>=8.1.0 in /home/ffund/.local/lib/python3.8/site-packages
    (from pypandoc) (21.1.1)
WARNING: You are using pip version 21.1.1; however, version 21.1.2 is available.
You should consider upgrading via the '/usr/bin/python3 -m pip install --upgrade pip'
    command.
```

Step 3: Mount your Google Drive

In *this* notebook, mount your Google Drive:

```
from google.colab import drive
drive.mount('/content/drive')
```

```
---------------------------------------------------------------------------
ModuleNotFoundError                       Traceback (most recent call last)
<ipython-input-3-d5df0069828e> in <module>
----> 1 from google.colab import drive
      2 drive.mount('/content/drive')

ModuleNotFoundError: No module named 'google.colab'
```

Step 4: Select notebook and convert to PDF

In *both* of the following cells, change the name "Untitled" to whatever your notebook is named. Then, run the cell.

```
!jupyter nbconvert --output-dir='/content' --to latex  '/content/drive/My Drive/Colab
    Notebooks/Untitled.ipynb'
```

```
[NbConvertApp] WARNING | pattern '/content/drive/My Drive/Colab Notebooks/Untitled.ipynb'
    matched no files
Traceback (most recent call last):
  File "/usr/bin/jupyter-nbconvert", line 11, in <module>
    load_entry_point('nbconvert==5.6.1', 'console_scripts', 'jupyter-nbconvert')()
  File "/usr/lib/python3/dist-packages/jupyter_core/application.py", line 270, in
      launch_instance
    return super(JupyterApp, cls).launch_instance(argv=argv, **kwargs)
  File "/usr/lib/python3/dist-packages/traitlets/config/application.py", line 663, in
      launch_instance
    app.initialize(argv)
  File "<decorator-gen-7>", line 2, in initialize
  File "/usr/lib/python3/dist-packages/traitlets/config/application.py", line 87, in
      catch_config_error
    return method(app, *args, **kwargs)
  File "/usr/lib/python3/dist-packages/nbconvert/nbconvertapp.py", line 286, in initialize
    self.init_writer()
  File "/usr/lib/python3/dist-packages/nbconvert/nbconvertapp.py", line 327, in init_writer
    self.writer = self.writer_factory(parent=self)
  File "/usr/lib/python3/dist-packages/nbconvert/writers/files.py", line 44, in __init__
    super(FilesWriter, self).__init__(**kw)
  File "/usr/lib/python3/dist-packages/nbconvert/writers/base.py", line 27, in __init__
    super(WriterBase, self).__init__(config=config, **kw)
  File "/usr/lib/python3/dist-packages/nbconvert/utils/base.py", line 29, in __init__
    super(NbConvertBase, self).__init__(**kw)
  File "/usr/lib/python3/dist-packages/traitlets/config/configurable.py", line 84, in
      __init__
    self.config = config
  File "/usr/lib/python3/dist-packages/traitlets/traitlets.py", line 585, in __set__
    self.set(obj, value)
  File "/usr/lib/python3/dist-packages/traitlets/traitlets.py", line 574, in set
    obj._notify_trait(self.name, old_value, new_value)
  File "/usr/lib/python3/dist-packages/traitlets/traitlets.py", line 1134, in _notify_trait
    self.notify_change(Bunch(
  File "/usr/lib/python3/dist-packages/traitlets/traitlets.py", line 1176, in notify_change
    c(change)
  File "/usr/lib/python3/dist-packages/traitlets/traitlets.py", line 819, in
      compatible_observer
    return func(self, change)
  File "/usr/lib/python3/dist-packages/traitlets/config/configurable.py", line 186, in
      _config_changed
    self._load_config(change.new, traits=traits, section_names=section_names)
  File "/usr/lib/python3/dist-packages/traitlets/config/configurable.py", line 168, in
      _load_config
    warn(msg)
  File "/usr/lib/python3.8/contextlib.py", line 120, in __exit__
    next(self.gen)
```

```
  File "/usr/lib/python3/dist-packages/traitlets/traitlets.py", line 1131, in
      hold_trait_notifications
    self.notify_change(change)
  File "/usr/lib/python3/dist-packages/traitlets/traitlets.py", line 1176, in notify_change
    c(change)
  File "/usr/lib/python3/dist-packages/nbconvert/writers/files.py", line 41, in
      _build_directory_changed
    ensure_dir_exists(new)
  File "/usr/lib/python3/dist-packages/ipython_genutils/path.py", line 167, in
      ensure_dir_exists
    os.makedirs(path, mode=mode)
  File "/usr/lib/python3.8/os.py", line 223, in makedirs
    mkdir(name, mode)
PermissionError: [Errno 13] Permission denied: '/content'
```

```
!xelatex --interaction=nonstopmode Untitled.tex
```

```
This is XeTeX, Version 3.14159265-2.6-0.999991 (TeX Live 2019/Debian) (preloaded
    format=xelatex)
 restricted \write18 enabled.
entering extended mode
! I can't find file `Untitled.tex'.
<*> Untitled.tex

(Press Enter to retry, or Control-D to exit)
Please type another input file name
! Emergency stop.
<*> Untitled.tex

No pages of output.
Transcript written on texput.log.
```

Step 5: Download PDF

Finally, open the Colab file browser, locate your new PDF, and download it. Review the PDF and make sure it looks good before you submit!