

pandoc-source-exec examples

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Preamble

Compile this document as follows:

```
pandoc --filter pandoc-source-exec \  
      --highlight-style tango \  
      -o example.pdf example.md
```

Usage

To execute code, add the class `exec` to your code:

```
```{ .python .exec }  
print('Hello World')
```
```

This results in:

```
print('Hello World')
```

Output:

```
Hello World
```

You can also supply the interpreter keys in the `runas` argument:

```
```{ .python .exec runas=python2 }  
print 'Hello World'
```
```

Or you can simply make up your own command:

```
```{ .exec cmd='/usr/bin/env python2 -c' }  
print 'Hello World'
```
```

Examples

No execution

```
a = 3 + 5
print(a)
```

Simple execution

Using: { `.python .exec` }

```
print('Hello World')
```

Output:

```
Hello World
```

Advanced execution

Known interpreter { `.python .exec runas=python2` }:

```
print 'Hello World'
```

Output:

```
Hello World
```

Custom interpreter { `.exec cmd='/usr/bin/env python2 -c` }:

```
print 'Hello World'
```

Output:

```
Hello World
```

Or ruby { `.exec cmd='/usr/bin/env ruby -e` }:

```
puts 'Hello World!'
```

Output:

```
Hello World!
```

Errors

`stderr` is piped to `stdout`, so that errors can also be shown.

Using: { `.python .exec` }

```
print('Hello
```

Output:

```
File "<string>", line 1
  print('Hello
    ^
SyntaxError: EOL while scanning string literal
```

File execution

Using: { `.python .exec file='example.py' }`

File: example.py

```
import math

a = 3
b = 4
c = math.sqrt(a ** 2 + b ** 2)

print(c)
```

Output:

```
5.0
```

It is also possible to only include several lines in the output. These lines are omitted *after* execution.

Using: { `.python .exec file=example.py lines=3-5` }

File: example.py

```
a = 3
b = 4
c = math.sqrt(a ** 2 + b ** 2)
```

Output:

```
5.0
```

Possible values for specifying lines are:

- `#`: single line number
- `start-end`: a line range from start to end, including both
- `-end`: from the start (1) to end, inclusive
- `start-`: from start (inclusive) to the end of the file
- any combination of the above, separated by commas: `4-7,11-,9,1`

Program arguments

When loading a file, it often accepts some command line arguments. Specify these with `args=`.

Using: { `.python .exec args="-a 1" }`

```
import sys

print(sys.argv)
```

Output:

```
['-c', '-a', '1']
```

Note that since the code is currently read from files first and then passed to the interpreter as a string, `-c` is always the first argument!

Using: { `.python .exec file=args.py args=-t }`

File: args.py

```
import sys

print(sys.argv)
```

Output:

```
['-c', '-t']
```

Working directory

The working directory can be changed. This is especially useful in cases, where pandoc is executed in a different directory than the code.

Using: { `.python .exec file='example.py' wd='.' }`

File: example.py

```
import math

a = 3
b = 4
c = math.sqrt(a ** 2 + b ** 2)

print(c)
```

Output:

```
5.0
```

File without execution

Using: { `.python file='example.py'` }

File: `example.py`

```
import math

a = 3
b = 4
c = math.sqrt(a ** 2 + b ** 2)

print(c)
```

Interactive execution

Using: { `.python .exec .interactive` }

Interactive code will also be detected if the code block starts with `>>>`.

Note: This only works with python code so far, a custom command is not possible.

Note: The REPLWrapper changed, so this does only provide very limited support. In particular, only single-line-statements can be executed.

```
>>> a = 5 + 4
>>> 9 == a
True
>>> print(a)
9
```

API

The following keywords (classes denoted by a prefixed `.`, attributes with a following `=`) exist:

- .caption and caption=** Mutually exclusive. If `.caption` is used, instead of printing `File: ...` above the code, a caption is created above (using the LaTeX package `caption`) the listing and in the compiled LaTeX document the `\listofcodelistings` macro becomes available. To specify a custom caption, use `caption="My caption"`. If a filename was specified, this would render to “My caption (path/to/file.py)”.
- .captionbelow** Places the captions below the listing.
- shortcaption=** A short caption to be used in the list of code listings.
- cmd=** Allows to specify a custom interpreter command to execute the code. For example, to run ruby code one could use `cmd='ruby -e'`.

.exec Executes the following code cell according to the specified language. By default, it is only **echoed**.

file= Replaces the code cell with content from the specified file. This searches recursively for files matching the pattern, so if you use **file=code.py** but your code is in fact in **src/code.py** it will still be found. Specify the full path to avoid ambiguities.

lines= Only the selected lines will be printed (but all will be executed). Can be specified using something like: **-5,7,9,11,14-17,19,22-**. A **-** without a left or right means “from the beginning” or “until the end”, otherwise **-** denotes a range. Single numbers are single lines, multiple specifications can be combined using **,**.

.interactive Executes the code as if it was inserted into an interactive session, returns results inline into the original code block. Only works for python code so far.

runas= Executes code with the specified executor, e.g. **python2** to distinguish it from **python** which defaults to **python3**. Can be overwritten by specifying **cmd=**.

.hideimports Hides import statements in output. Currently only supported for Python.

pathlength= Limits the number of path elements for a filename. If a path is e.g. **a/b/c/code.py** and **pathlength=2**, only **c/code.py** is shown. This is only useful using **file=**.

wd= Sets the working directory.

Supported languages

To be used with **runas=**, if it does not already match the language identifier:

- default
- perl
- php
- python
- python2
- python3
- ruby

default

default

Output:

```
default
```

perl

```
print 'perl';
```

Output:

```
perl
```

php

```
echo 'php';
```

Output:

```
php
```

python

```
print('python')
```

Output:

```
python
```

```
print 'runas=python2'
```

python2 *Output:*

```
runas=python2
```

```
print('runas=python3')
```

python3 *Output:*

```
runas=python3
```

ruby

```
puts 'ruby'
```

Output:

```
ruby
```

Removing imports

Removing imports affects only the final code rendering, not the execution.

```
```{ .python .exec .hideimports }  
import statistics

print(statistics.mean([1, 2, 3]))
```
```

Results in

```
print(statistics.mean([1, 2, 3]))
```

Output:

```
2
```

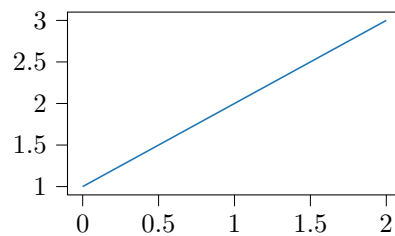
Plotting matplotlib

```
```{ .python .exec .plt }  
import matplotlib.pyplot as plt

plt.plot([1, 2, 3])
```
```

```
import matplotlib.pyplot as plt  
  
plt.plot([1, 2, 3])
```

Output:



Additionally `width=6cm` and `height=5cm` can be used. As a shortcut, one can instead use `plt=6cm,5cm`.


```

\begin{python .exec .plt width=7cm height=2cm }
import matplotlib.pyplot as plt

plt.plot([1, 2, 3])
\end{python}

```

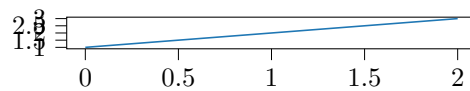
```

import matplotlib.pyplot as plt

plt.plot([1, 2, 3])

```

Output:



Captions

Captions make proper “listing” environments, which are floating. They are set to [htbp].

A normal “captionized” file

This is Code Listing 1.

```

\begin{python .caption file='example.py' }
\end{python}

```

Code Listing 1: `example.py`

```

import math

a = 3
b = 4
c = math.sqrt(a ** 2 + b ** 2)

print(c)

```

A custom caption

This is Code Listing 2.

```

\begin{python caption="Custom caption" file='example.py' }
\end{python}

```

Code Listing 2: Custom caption (example.py)

```
import math

a = 3
b = 4
c = math.sqrt(a ** 2 + b ** 2)

print(c)
```

Caption for a normal code block

This is Code Listing 3.

```
```{ .python caption="Caption for a normal code block" }
print('Hello World!')
```
```

Code Listing 3: Caption for a normal code block

```
print('Hello World!')
```

Empty caption

This is Code Listing 4. Note that empty captions are not included in the list of code listings (see below).

```
```{ .python .caption }
print('Hello World!')
```
```

Code Listing 4

```
print('Hello World!')
```

Short captions

Sometimes, long captions are too much for the list of code listings, thus you can provide a short caption:

```
```{ .python caption="Long caption" shortcaption="Short" }
print('Hello World!')
```
```

Code Listing 5: Long caption

```
print('Hello World!')
```

Placing a caption below

By default, captions are placed above the code block. By using the class `capbelow`, this can be changed:

```
```{ .python caption="Caption below" .capbelow }  
print('Hello World!')
```
```

```
print('Hello World!')
```

Code Listing 6: Caption below

Caption with execution does also work

This is Code Listing 5 with an executed code block.

```
```{ .python .exec caption="Simple 'Hello World'" }  
print('Hello World!')
```
```

Code Listing 7: Simple ‘Hello World’

```
print('Hello World!')
```

Output:

```
Hello World!
```

List of Code Listings

```
\listofcodelistings
```

List of Code Listings

| | | |
|---|---|----|
| 1 | example.py | 9 |
| 2 | Custom caption | 10 |
| 3 | Caption for a normal code block | 10 |

| | | |
|---|--------------------------------|----|
| 5 | Short | 11 |
| 6 | Caption below | 11 |
| 7 | Simple ‘Hello World’ | 11 |