

# pandoc-source-exec examples

Sebastian Höffner

March 2017

## 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
```

## 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.
- `.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

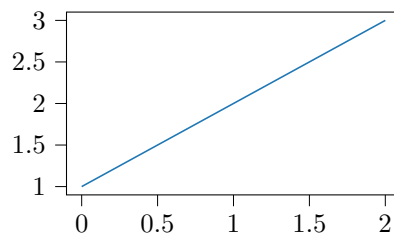
```
```{ .python .exec .plt }  
import matplotlib.pyplot as plt
```

```
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`.

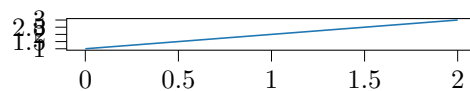
```
'''{ .python .exec .plt width=7cm height=2cm }
import matplotlib.pyplot as plt

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

```
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.



```
```{ .python .caption file='example.py' }
```

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.

```
```{ .python caption="Custom caption" file='example.py' }
```

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 . . . . .                  | 9  |
| 3 | Caption for a normal code block . . . . . | 9  |
| 5 | Short . . . . .                           | 10 |
| 6 | Caption below . . . . .                   | 10 |
| 7 | Simple ‘Hello World’ . . . . .            | 11 |