

# CHS PYTHON library Project

## What is the aim of the project

The goal is to provide a library of Python functions.

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## How to install the library

Checkout the library in a local directory also called PYTHON\_chs\_lib:

```
svn checkout https://svn.ufz.de/svn/chs-svn/PYTHON_chs_lib/
```

To checkout into a local folder with the local name "local\_name", which will be created if it does not exist yet:

```
svn checkout https://svn.ufz.de/svn/chs-svn/PYTHON_chs_lib/ local_name/
```

The library has to be in your Python path. For example in bash:

```
export PYTHONPATH=/path/to/the/ufz/library
```

It can also be installed with the usual setup.py commands using distutils:

```
python setup.py install
```

If one wants to use the development capabilities of setuptools, you can use something like

```
python -c "import setuptools; execfile('setup.py')" develop
```

This basically creates an .egg-link file and updates an easy-install.pth file so that the project is on sys.path by default.

Distutils also allows to make Windows installers with

```
python setup.py bdist_wininst
```

## What is in the library

See the docstring of [ufz.py](#) which functions are available.  
 On the Python prompt:

```
>>> import ufz
>>> help(ufz)
```

The individual functions also provide their help as docstrings.  
 Getting, for example, help on [fread.py](#) for reading ascii files:

```
>>> import ufz
>>> help(ufz.fread)
```

## How to contribute to the Python lib

Here we give an example to add the function [around.py](#):

1. Write the function:

```
def around(num, powten, ceil=False, floor=False):
    # Check input
    if (ceil and floor):
        ...
    return out
```

2. Add documentation as a docstring just after the function definition:

```
def around(num, powten, ceil=False, floor=False):
    """
    Round to the passed power of ten.

    Definition
    -----
    def around(num, powten=None, ceil=False, floor=False):

    Input
    ----
    num      number array
    .
    .
    .
    """
```

3. In the docstring provide examples with outputs for all options:

```
def around(num, powten, ceil=False, floor=False):
    """
    .
    .
    .
    Examples
    -----
    >>> around(np.array([3.5967,345.5967]), -3)
    array([ 3.597, 345.597])
    >>> around(np.array([1994344,345.5967]), [3,-3])
    array([ 1.99400000e+06,  3.45597000e+02])
    >>> around(np.array([1994344,345.5967]), [3,-3], ceil=True)
    array([ 1.99500000e+06,  3.45597000e+02])
    >>> around(np.array([1994344,345.5967]), [3,-3], floor=True)
    array([ 1.99400000e+06,  3.45596000e+02])
    >>> around(np.array([3.5967,345.5967]), 3)
    array([ 0.,  0.])
    >>> around(np.array([3.5967,345.5967]), 3, ceil=True)
    array([ 1000., 1000.])
    ...
```

4. The end of the file should provide a call to doctest, which tests all the examples in the docstring:

```
if __name__ == '__main__':
    import doctest
    doctest.testmod()
```

5. The routine is then tested by doctest when called stand-alone:

```
python around.py
```

6. Add the routine to the Python library:

- a. Import the function in ufz.py:

```
from around import *
```

- b. then add the function with a short description in the docstring of ufz.py. Add it in the alphabetical section and in the section per category:

```
...
Provided functions (alphabetic)
-----
```

around	Round to the passed power of ten.
autostring	Format number (array) with given decimal precision.
.	
.	
.	
Miscellaneous	
-----	
around	Round to the passed power of ten.
...	

## License

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