

Useful_libraries

June 30, 2017

```
In [1]: # The following is to know when this notebook has been run and with which python version.
import time, sys
print(time.ctime())
print(sys.version.split('|')[0])
```

Wed Jun 28 16:52:50 2017

```
In [2]: import numpy as np
```

1 F Some useful libraries that make life easier

This is part of the Python lecture given by Christophe Morisset at IA-UNAM.

This lecture will give some insights to the most useful python libraries. It is NOT exhaustive, you have to read the corresponding manual pages to find the best use you can have of them. The list of all python-included libraries is here: <https://docs.python.org/2/library/>

1.0.1 time, datetime and timeit

- <https://docs.python.org/2/library/time.html>
- <https://docs.python.org/2/library/datetime.html>

```
In [3]: import time
import datetime
```

```
In [4]: print(time.ctime()) # current time, in a string format
```

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```
In [6]: lt = time.localtime()
print(lt)
```

```
time.struct_time(tm_year=2017, tm_mon=6, tm_mday=28, tm_hour=16, tm_min=53, tm_sec=0, tm_wday=2, tm_yday=189)
```

```
In [7]: time.strftime("%a, %d %b %Y %H:%M:%S",lt)
```

```
Out[7]: 'Wed, 28 Jun 2017 16:53:00'
```

```
In [8]: print(datetime.datetime.today())
```

2017-06-28 16:53:08.508068

```
In [9]: today = datetime.date.today()
philae_landing = datetime.date(2014, 11, 11)
```

```
In [10]: time_to_landing = philae_landing - today
```

```
In [11]: if philae_landing > today:
        print('Philae landing in {} days.'.format(time_to_landing.days))
    else:
        print('Philae landed since {} days.'.format(-time_to_landing.days))
```

Philae landed since 960 days.

```
In [12]: start = time.time()
        for i in np.arange(1000):
            t = np.math.factorial(i)
        end = time.time()
        print('1000 factorials done in {0:.3f} secs.'.format(end-start))
```

1000 factorials done in 0.023 secs.

```
In [13]: from timeit import Timer
        command = """\
        for i in np.arange(1000):
            t = np.math.factorial(i)
        """
        t = Timer(command, setup='import numpy as np')
        print(t.timeit(number=1))
```

0.022329822066240013

in ipython, one can use the magic timeit function:

```
In [14]: %timeit np.math.factorial(50)
```

986 ns \pm 28.1 ns per loop (mean \pm std. dev. of 7 runs, 1000000 loops each)

or for the whole cell:

```
In [15]: %%timeit
        for i in np.arange(1000):
            t = np.math.factorial(i)
```

21.5 ms \pm 309 μ s per loop (mean \pm std. dev. of 7 runs, 10 loops each)

1.0.2 os

<https://docs.python.org/2/library/os.html> This module provides a portable way of using operating system dependent functionality. If you just want to read or write a file see `open()`, if you want to manipulate paths, see the `os.path` module, and if you want to read all the lines in all the files on the command line see the `fileinput` module. For creating temporary files and directories see the `tempfile` module, and for high-level file and directory handling see the `shutil` module.

```
In [16]: import os
```

```
In [18]: # os.environ is a dictionary containing the environment variables and values
        if 'HOME' in os.environ:
            print(os.environ['HOME'])
        else:
            print('This OS is too limited to understand HOME')
```

/home/morisset

```
In [20]: # if variable doesn't exists, getenv returns None
print(os.getenv('HOMMMMMME'))
```

None

```
In [21]: # get current working directory
cwd = os.getcwd()
print(cwd) #.split('/')[ -1]
```

/home/morisset/Google Drive/Pro/Python-MySQL/Notebooks/Notebooks

```
In [22]: new_dir = '/tmp/test3456'
if not os.path.exists(new_dir):
    os.mkdir(new_dir)
    print('Dir {} created'.format(new_dir))
else:
    print('Dir {} exists'.format(new_dir))
```

Dir /tmp/test3456 created

```
In [23]: # list all the files from a directory
os.listdir(new_dir)
```

Out[23]: []

```
In [24]: os.chdir(cwd)
os.getcwd()
```

Out[24]: '/home/morisset/Google Drive/Pro/Python-MySQL/Notebooks/Notebooks'

```
In [26]: # Renaming files in a directory
cwd = os.getcwd()
os.chdir('/tmp')
for filename in os.listdir('./'):
    print(filename)
    base_file, ext = os.path.splitext(filename)
    #print base_file, ext
    if ext == '.exe':
        newname = base_file + '.txt'
        os.rename(filename, newname)
        print('file {0} renamed to {1}'.format(filename, newname))
os.chdir(cwd)
```

test3456
.dropbox-dist-new-flR7P8
.com.google.Chrome.I1k252
.xfsm-ICE-25SD2Y
.X1-lock
hsperfdata_morisset
morisset
virt.1113
virtuoso_kn2480.ini
insync1167.sock
.esd-1167
pulse-11Zb5izanH6S
systemd-private-9cNMIj

```
akonadi-morisset.xpFdIC
systemd-private-QHbK4W
ksocket-morisset
kde-morisset
ssh-CcZB7Vp5GVNr
.XauthP2hn6a
systemd-private-w9Di3x
systemd-private-m640E4
.X0-lock
systemd-private-gnA5Bh
.Test-unix
.font-unix
.XIM-unix
.ICE-unix
.X11-unix
```

1.0.3 sys

<https://docs.python.org/2/library/sys.html> This module provides access to some variables used or maintained by the interpreter and to functions that interact strongly with the interpreter. It is always available.

The `sys.argv` list contains the arguments passed to the script, when the interpreter was started. The first item contains the name of the script itself.

```
In [27]: %%writefile sys_text.py
import sys
for arg in sys.argv:
    print(arg)
```

Overwriting sys_text.py

```
In [28]: ! python sys_text.py tralala
```

```
sys_text.py
tralala
```

```
In [29]: %%writefile fact.py
import sys
import numpy
print numpy.math.factorial(int(sys.argv[1]))
```

Overwriting fact.py

```
In [30]: ! python fact.py 6
```

```
720
```

A more complete management of the argument (especially those like `-v`) is available using the `argparse` library. <https://docs.python.org/2/library/argparse.html>

1.0.4 Talking to the OS subprocess

The `os.popen` method is deprecated, `subprocess` is preferred. A good tutorial is here: <http://pymotw.com/2/subprocess/>

```
In [1]: import subprocess
```

```
In [2]: ls -l
```

total 37292

-rw-----	1	morisset morisset	89353	Oct 26	2016	0040000_6.00_33.50_02.15.bin.0.1.gz
-rw-----	1	morisset morisset	89971	Oct 26	2016	0090000_6.00_33.50_02.15.bin.0.1.gz
-rw-----	1	morisset morisset	90544	Oct 26	2016	0100000_6.00_33.50_02.15.bin.0.1.gz
-rw-----	1	morisset morisset	89170	Oct 26	2016	0140000_6.00_33.50_02.15.bin.0.1.gz
-rw-----	1	morisset morisset	88591	Oct 26	2016	0190000_6.00_33.50_02.15.bin.0.1.gz
-rw-----	1	morisset morisset	466800	Sep 18	2015	BPT1.pdf
-rw-----	1	morisset morisset	45181	Sep 18	2015	BPT1.png
-rw-----	1	morisset morisset	4229587	Jul 1	2015	CALIFA_ah7.dat.gz
-rw-----	1	morisset morisset	19376	Nov 9	2016	Calling Fortran.ipynb
-rw-----	1	morisset morisset	86815	Jun 1	2016	Calling Fortran.pdf
-rw-----	1	morisset morisset	14	Jun 28	15:58	data10.dat
-rw-----	1	morisset morisset	32	Jun 28	15:58	data11.dat
-rw-----	1	morisset morisset	94	Jun 28	15:58	data12.dat
-rw-----	1	morisset morisset	64	Sep 22	2016	data14.dat
-rw-----	1	morisset morisset	64	Jun 28	15:42	data1.dat
-rw-----	1	morisset morisset	147	Jun 28	15:47	data2.dat
-rw-----	1	morisset morisset	169	Jun 28	15:51	data3.dat
-rw-----	1	morisset morisset	1189	Jun 28	15:56	data4.dat
-rw-----	1	morisset morisset	1185	Jun 28	15:57	data5.dat
-rw-----	1	morisset morisset	1186	Sep 28	2016	data6.dat
-rw-----	1	morisset morisset	136	Sep 9	2015	data_ex1.dat
-rw-----	1	morisset morisset	298	Oct 8	2014	dcumsum.f
-rw-----	1	morisset morisset	30716	Nov 9	2016	dcumsum.so
-rw-----	1	morisset morisset	2220144	Aug 31	2016	Demo2.pickle
-rw-----	1	morisset morisset	2220109	Aug 31	2016	Demo3.pickle
-rw-----	1	morisset morisset	226	Jun 28	16:03	Demo.pickle
-rw-----	1	morisset morisset	198	Jun 28	16:09	Demo.pklz
-rw-----	1	morisset morisset	381664	Sep 22	2015	Ex1.done.ipynb
-rw-----	1	morisset morisset	1379	Jun 15	13:50	ex1.html
-rw-----	1	morisset morisset	7717	Sep 9	2015	Ex1.ipynb
-rw-----	1	morisset morisset	154	Jun 15	13:49	ex1.py
-rw-----	1	morisset morisset	288	Jun 15	13:50	ex1.pyc
-rw-----	1	morisset morisset	8	Sep 18	2014	ex1.txt
-rw-----	1	morisset morisset	315341	Sep 14	2015	Ex1.with.res.ipynb
-rw-----	1	morisset morisset	69	Jun 28	16:54	fact.py
-rw-----	1	morisset morisset	352680	Oct 16	2015	Fig1.eps
-rw-----	1	morisset morisset	127137	Jun 28	16:20	Fig1.pdf
-rw-----	1	morisset morisset	4995	Nov 10	2015	grep2.py
-rw-----	1	morisset morisset	6319	Nov 10	2015	grep3.py
-rw-----	1	morisset morisset	5575	Dec 9	2016	grep3.pyc
-rw-----	1	morisset morisset	4214	Sep 27	2015	grep.py
-rw-----	1	morisset morisset	1090	Oct 8	2014	hellofortran.c
-rw-----	1	morisset morisset	178	Oct 8	2014	hellofortran.f
-rw-----	1	morisset morisset	33976	Oct 8	2014	hellofortran.so
-rw-----	1	morisset morisset	49	Oct 8	2014	hello.py
-rw-----	1	morisset morisset	150	Feb 3	2016	index.html
-rw-----	1	morisset morisset	838576	Aug 17	2016	InstallPython.key
-rw-----	1	morisset morisset	520383	Jun 28	16:11	Interact with files.ipynb
-rw-----	1	morisset morisset	199526	Jun 1	2016	Interact with files.pdf
-rw-----	1	morisset morisset	131497	Aug 12	2015	Intro_1.odp
-rw-----	1	morisset morisset	174202	Aug 12	2015	Intro_1.pdf
-rw-----	1	morisset morisset	130234	Aug 12	2015	Intro_2014.odp
-rw-----	1	morisset morisset	2476656	Jun 28	16:21	intro_Matplotlib.ipynb

```

-rw-----. 1 morisset morisset 1497041 Jun 1 2016 intro_Matplotlib.pdf
-rw-----. 1 morisset morisset 93305 Jun 28 15:41 intro_numpy.ipynb
-rw-----. 1 morisset morisset 126416 Jun 1 2016 intro_numpy.pdf
-rw-----. 1 morisset morisset 179449 Aug 28 2014 intro_Python_2.pdf
-rw-----. 1 morisset morisset 103229 Aug 28 2014 intro_Python_3.pdf
-rw-----. 1 morisset morisset 326924 Aug 28 2014 intro_Python.html
-rw-----. 1 morisset morisset 76946 Jun 15 13:53 intro_Python.ipynb
-rw-----. 1 morisset morisset 118317 Jun 1 2016 intro_Python.pdf
-rw-----. 1 morisset morisset 733506 Jun 28 16:51 intro_Scipy.ipynb
-rw-----. 1 morisset morisset 586109 Jun 1 2016 intro_Scipy.pdf
-rw-----. 1 morisset morisset 2210409 Oct 23 2015 MySQL.pdf
-rw-----. 1 morisset morisset 1270918 Sep 21 2015 MySQL.pdf.gz
-rw-----. 1 morisset morisset 8830080 Sep 3 2014 n10017o.fits
-rw-----. 1 morisset morisset 5760 Jun 28 16:11 new.fits
-rw-----. 1 morisset morisset 714212 Oct 19 2016 OOP.ipynb
-rw-----. 1 morisset morisset 582837 Jun 1 2016 OOP.pdf
-rw-----. 1 morisset morisset 849205 Oct 26 2016 Optimization.ipynb
-rw-----. 1 morisset morisset 481656 Jun 2 2016 Optimization.pdf
-rw-----. 1 morisset morisset 2537 Nov 9 2016 Parallel.ipynb
drwx-----. 2 morisset morisset 4096 Jun 15 13:50 __pycache__
-rw-----. 1 morisset morisset 435801 May 31 2016 query_res.dat
-rw-----. 1 morisset morisset 1059840 Sep 3 2014 swp04345.mxhi
-rw-----. 1 morisset morisset 47 Jun 28 16:54 sys_text.py
-rw-----. 1 morisset morisset 353 Sep 28 2016 tab1.dat
-rw-----. 1 morisset morisset 772 Sep 28 2016 tab_cds1.ascii
-rw-----. 1 morisset morisset 43200 Sep 25 2014 tab_cds1.fits
-rw-----. 1 morisset morisset 1458 Jun 1 2016 tab_cds1.tex
-rw-----. 1 morisset morisset 1826 Sep 28 2016 tab_cds2.ascii
-rw-----. 1 morisset morisset 4252 Nov 23 2016 Tarea1.py
-rw-----. 1 morisset morisset 7033 Nov 2 2015 test1.pdf
-rw-----. 1 morisset morisset 176673 Oct 16 2014 test1-po
-rw-----. 1 morisset morisset 561026 Oct 26 2016 test1-prof.png
-rw-----. 1 morisset morisset 353203 Oct 26 2016 test1_prof.prof
-rw-----. 1 morisset morisset 6805 Oct 26 2016 test1_prof.py
-rw-----. 1 morisset morisset 72 Sep 27 2015 test1.test
-rw-----. 1 morisset morisset 6833 Oct 26 2016 test2_prof.py
-rw-----. 1 morisset morisset 580 Oct 26 2016 test2_prof.py.lprof
-rw-----. 1 morisset morisset 45 Sep 27 2015 test2.test
-rw-----. 1 morisset morisset 6579 Oct 26 2016 test3_prof.py
-rw-----. 1 morisset morisset 6524 Oct 26 2016 test5_pdb.py
-rw-----. 1 morisset morisset 6444 Oct 26 2016 test6_pdb.py
drwx-----. 3 morisset morisset 4096 Nov 15 2016 tt/
-rw-----. 1 morisset morisset 36310 Jun 28 17:06 Useful_libraries.ipynb
-rw-----. 1 morisset morisset 99251 Jun 1 2016 Useful_libraries.pdf
-rw-----. 1 morisset morisset 149812 Sep 28 2016 Using_astropy.ipynb
-rw-----. 1 morisset morisset 195539 Jun 1 2016 Using_astropy.pdf
-rw-----. 1 morisset morisset 262324 Nov 16 2016 Using_PyMySQL.ipynb
-rw-----. 1 morisset morisset 221936 Nov 16 2016 Using_PyMySQL.pdf

```

```
In [3]: subprocess.call(['ls -l'], shell=True)
```

```
# The results is not visible in Notebook. In command line, the files are listed
```

```
Out[3]: 0
```

```
In [5]: output = subprocess.check_output(['ls', '-l'])
        print(type(output))
```

```

print(output.decode())

<class 'bytes'>
total 37292
-rw-----. 1 morisset morisset 89353 Oct 26 2016 0040000_6.00_33.50_02.15.bin.0.1.gz
-rw-----. 1 morisset morisset 89971 Oct 26 2016 0090000_6.00_33.50_02.15.bin.0.1.gz
-rw-----. 1 morisset morisset 90544 Oct 26 2016 0100000_6.00_33.50_02.15.bin.0.1.gz
-rw-----. 1 morisset morisset 89170 Oct 26 2016 0140000_6.00_33.50_02.15.bin.0.1.gz
-rw-----. 1 morisset morisset 88591 Oct 26 2016 0190000_6.00_33.50_02.15.bin.0.1.gz
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-rw-----. 1 morisset morisset 45181 Sep 18 2015 BPT1.png
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-rw-----. 1 morisset morisset 19376 Nov 9 2016 Calling Fortran.ipynb
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-rw-----. 1 morisset morisset 14 Jun 28 15:58 data10.dat
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-rw-----. 1 morisset morisset 94 Jun 28 15:58 data12.dat
-rw-----. 1 morisset morisset 64 Sep 22 2016 data14.dat
-rw-----. 1 morisset morisset 64 Jun 28 15:42 data1.dat
-rw-----. 1 morisset morisset 147 Jun 28 15:47 data2.dat
-rw-----. 1 morisset morisset 169 Jun 28 15:51 data3.dat
-rw-----. 1 morisset morisset 1189 Jun 28 15:56 data4.dat
-rw-----. 1 morisset morisset 1185 Jun 28 15:57 data5.dat
-rw-----. 1 morisset morisset 1186 Sep 28 2016 data6.dat
-rw-----. 1 morisset morisset 136 Sep 9 2015 data_ex1.dat
-rw-----. 1 morisset morisset 298 Oct 8 2014 dcumsum.f
-rw-----. 1 morisset morisset 30716 Nov 9 2016 dcumsum.so
-rw-----. 1 morisset morisset 2220144 Aug 31 2016 Demo2.pickle
-rw-----. 1 morisset morisset 2220109 Aug 31 2016 Demo3.pickle
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-rw-----. 1 morisset morisset 288 Jun 15 13:50 ex1.pyc
-rw-----. 1 morisset morisset 8 Sep 18 2014 ex1.txt
-rw-----. 1 morisset morisset 315341 Sep 14 2015 Ex1.with.res.ipynb
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-rw-----. 1 morisset morisset 127137 Jun 28 16:20 Fig1.pdf
-rw-----. 1 morisset morisset 4995 Nov 10 2015 grep2.py
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-rw-----. 1 morisset morisset 5575 Dec 9 2016 grep3.pyc
-rw-----. 1 morisset morisset 4214 Sep 27 2015 grep.py
-rw-----. 1 morisset morisset 1090 Oct 8 2014 hellofortran.c
-rw-----. 1 morisset morisset 178 Oct 8 2014 hellofortran.f
-rw-----. 1 morisset morisset 33976 Oct 8 2014 hellofortran.so
-rw-----. 1 morisset morisset 49 Oct 8 2014 hello.py
-rw-----. 1 morisset morisset 150 Feb 3 2016 index.html
-rw-----. 1 morisset morisset 838576 Aug 17 2016 InstallPython.key
-rw-----. 1 morisset morisset 520383 Jun 28 16:11 Interact with files.ipynb
-rw-----. 1 morisset morisset 199526 Jun 1 2016 Interact with files.pdf
-rw-----. 1 morisset morisset 131497 Aug 12 2015 Intro.1.odp

```

```

-rw-----. 1 morisset morisset 174202 Aug 12 2015 Intro_1.pdf
-rw-----. 1 morisset morisset 130234 Aug 12 2015 Intro_2014.odp
-rw-----. 1 morisset morisset 2476656 Jun 28 16:21 intro_Matplotlib.ipynb
-rw-----. 1 morisset morisset 1497041 Jun 1 2016 intro_Matplotlib.pdf
-rw-----. 1 morisset morisset 93305 Jun 28 15:41 intro_numpy.ipynb
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-rw-----. 1 morisset morisset 179449 Aug 28 2014 intro_Python_2.pdf
-rw-----. 1 morisset morisset 103229 Aug 28 2014 intro_Python_3.pdf
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drwx-----. 2 morisset morisset 4096 Jun 15 13:50 __pycache__
-rw-----. 1 morisset morisset 435801 May 31 2016 query_res.dat
-rw-----. 1 morisset morisset 1059840 Sep 3 2014 swp04345.mxhi
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-rw-----. 1 morisset morisset 1458 Jun 1 2016 tab_cds1.tex
-rw-----. 1 morisset morisset 1826 Sep 28 2016 tab_cds2.ascii
-rw-----. 1 morisset morisset 4252 Nov 23 2016 Tarea1.py
-rw-----. 1 morisset morisset 7033 Nov 2 2015 test1.pdf
-rw-----. 1 morisset morisset 176673 Oct 16 2014 test_1-po
-rw-----. 1 morisset morisset 561026 Oct 26 2016 test_1-prof.png
-rw-----. 1 morisset morisset 353203 Oct 26 2016 test_1_prof.prof
-rw-----. 1 morisset morisset 6805 Oct 26 2016 test_1_prof.py
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-rw-----. 1 morisset morisset 580 Oct 26 2016 test_2_prof.py.lprof
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-rw-----. 1 morisset morisset 6524 Oct 26 2016 test_5_pdb.py
-rw-----. 1 morisset morisset 6444 Oct 26 2016 test_6_pdb.py
drwx-----. 3 morisset morisset 4096 Nov 15 2016 tt
-rw-----. 1 morisset morisset 36310 Jun 28 17:06 Useful_libraries.ipynb
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-rw-----. 1 morisset morisset 149812 Sep 28 2016 Using_astropy.ipynb
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-rw-----. 1 morisset morisset 262324 Nov 16 2016 Using_PyMySQL.ipynb
-rw-----. 1 morisset morisset 221936 Nov 16 2016 Using_PyMySQL.pdf

```

```

In [7]: command = 'ls -l'
        popen = subprocess.Popen(command, shell=True)

```



```
# The same apply here, no output in Notebook
print(popen)
```

```
<subprocess.Popen object at 0x7f7be858cac8>
```

```
In [9]: popen = subprocess.Popen(command, stdout=subprocess.PIPE, shell=True)
        res = popen.communicate()[0]
        print(type(res))
        print(res.decode())
```

```
<class 'bytes'>
```

```
total 37292
```

```
-rw-----. 1 morisset morisset 89353 Oct 26 2016 0040000.6.00_33.50_02_15.bin.0.1.gz
-rw-----. 1 morisset morisset 89971 Oct 26 2016 0090000.6.00_33.50_02_15.bin.0.1.gz
-rw-----. 1 morisset morisset 90544 Oct 26 2016 0100000.6.00_33.50_02_15.bin.0.1.gz
-rw-----. 1 morisset morisset 89170 Oct 26 2016 0140000.6.00_33.50_02_15.bin.0.1.gz
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-rw-----. 1 morisset morisset 4229587 Jul 1 2015 CALIFA_ah7.dat.gz
-rw-----. 1 morisset morisset 19376 Nov 9 2016 Calling Fortran.ipynb
-rw-----. 1 morisset morisset 86815 Jun 1 2016 Calling Fortran.pdf
-rw-----. 1 morisset morisset 14 Jun 28 15:58 data10.dat
-rw-----. 1 morisset morisset 32 Jun 28 15:58 data11.dat
-rw-----. 1 morisset morisset 94 Jun 28 15:58 data12.dat
-rw-----. 1 morisset morisset 64 Sep 22 2016 data14.dat
-rw-----. 1 morisset morisset 64 Jun 28 15:42 data1.dat
-rw-----. 1 morisset morisset 147 Jun 28 15:47 data2.dat
-rw-----. 1 morisset morisset 169 Jun 28 15:51 data3.dat
-rw-----. 1 morisset morisset 1189 Jun 28 15:56 data4.dat
-rw-----. 1 morisset morisset 1185 Jun 28 15:57 data5.dat
-rw-----. 1 morisset morisset 1186 Sep 28 2016 data6.dat
-rw-----. 1 morisset morisset 136 Sep 9 2015 data.ex1.dat
-rw-----. 1 morisset morisset 298 Oct 8 2014 dcumsum.f
-rw-----. 1 morisset morisset 30716 Nov 9 2016 dcumsum.so
-rw-----. 1 morisset morisset 2220144 Aug 31 2016 Demo2.pickle
-rw-----. 1 morisset morisset 2220109 Aug 31 2016 Demo3.pickle
-rw-----. 1 morisset morisset 226 Jun 28 16:03 Demo.pickle
-rw-----. 1 morisset morisset 198 Jun 28 16:09 Demo.pklz
-rw-----. 1 morisset morisset 381664 Sep 22 2015 Ex1.done.ipynb
-rw-----. 1 morisset morisset 1379 Jun 15 13:50 ex1.html
-rw-----. 1 morisset morisset 7717 Sep 9 2015 Ex1.ipynb
-rw-----. 1 morisset morisset 154 Jun 15 13:49 ex1.py
-rw-----. 1 morisset morisset 288 Jun 15 13:50 ex1.pyc
-rw-----. 1 morisset morisset 8 Sep 18 2014 ex1.txt
-rw-----. 1 morisset morisset 315341 Sep 14 2015 Ex1.with.res.ipynb
-rw-----. 1 morisset morisset 69 Jun 28 16:54 fact.py
-rw-----. 1 morisset morisset 352680 Oct 16 2015 Fig1.eps
-rw-----. 1 morisset morisset 127137 Jun 28 16:20 Fig1.pdf
-rw-----. 1 morisset morisset 4995 Nov 10 2015 grep2.py
-rw-----. 1 morisset morisset 6319 Nov 10 2015 grep3.py
-rw-----. 1 morisset morisset 5575 Dec 9 2016 grep3.pyc
-rw-----. 1 morisset morisset 4214 Sep 27 2015 grep.py
-rw-----. 1 morisset morisset 1090 Oct 8 2014 hellofortran.c
-rw-----. 1 morisset morisset 178 Oct 8 2014 hellofortran.f
```

```

-rw-----. 1 morisset morisset 33976 Oct 8 2014 hellofortran.so
-rw-----. 1 morisset morisset 49 Oct 8 2014 hello.py
-rw-----. 1 morisset morisset 150 Feb 3 2016 index.html
-rw-----. 1 morisset morisset 838576 Aug 17 2016 InstallPython.key
-rw-----. 1 morisset morisset 520383 Jun 28 16:11 Interact with files.ipynb
-rw-----. 1 morisset morisset 199526 Jun 1 2016 Interact with files.pdf
-rw-----. 1 morisset morisset 131497 Aug 12 2015 Intro_1.odp
-rw-----. 1 morisset morisset 174202 Aug 12 2015 Intro_1.pdf
-rw-----. 1 morisset morisset 130234 Aug 12 2015 Intro_2014.odp
-rw-----. 1 morisset morisset 2476656 Jun 28 16:21 intro_Matplotlib.ipynb
-rw-----. 1 morisset morisset 1497041 Jun 1 2016 intro_Matplotlib.pdf
-rw-----. 1 morisset morisset 93305 Jun 28 15:41 intro_numpy.ipynb
-rw-----. 1 morisset morisset 126416 Jun 1 2016 intro_numpy.pdf
-rw-----. 1 morisset morisset 179449 Aug 28 2014 intro_Python_2.pdf
-rw-----. 1 morisset morisset 103229 Aug 28 2014 intro_Python_3.pdf
-rw-----. 1 morisset morisset 326924 Aug 28 2014 intro_Python.html
-rw-----. 1 morisset morisset 76946 Jun 15 13:53 intro_Python.ipynb
-rw-----. 1 morisset morisset 118317 Jun 1 2016 intro_Python.pdf
-rw-----. 1 morisset morisset 733506 Jun 28 16:51 intro_Scipy.ipynb
-rw-----. 1 morisset morisset 586109 Jun 1 2016 intro_Scipy.pdf
-rw-----. 1 morisset morisset 2210409 Oct 23 2015 MySQL.pdf
-rw-----. 1 morisset morisset 1270918 Sep 21 2015 MySQL.pdf.gz
-rw-----. 1 morisset morisset 8830080 Sep 3 2014 n10017o.fits
-rw-----. 1 morisset morisset 5760 Jun 28 16:11 new.fits
-rw-----. 1 morisset morisset 714212 Oct 19 2016 OOP.ipynb
-rw-----. 1 morisset morisset 582837 Jun 1 2016 OOP.pdf
-rw-----. 1 morisset morisset 849205 Oct 26 2016 Optimization.ipynb
-rw-----. 1 morisset morisset 481656 Jun 2 2016 Optimization.pdf
-rw-----. 1 morisset morisset 2537 Nov 9 2016 Parallel.ipynb
drwx-----. 2 morisset morisset 4096 Jun 15 13:50 __pycache__
-rw-----. 1 morisset morisset 435801 May 31 2016 query_res.dat
-rw-----. 1 morisset morisset 1059840 Sep 3 2014 swp04345.mxhi
-rw-----. 1 morisset morisset 47 Jun 28 16:54 sys.text.py
-rw-----. 1 morisset morisset 353 Sep 28 2016 tab1.dat
-rw-----. 1 morisset morisset 772 Sep 28 2016 tab_cds1.ascii
-rw-----. 1 morisset morisset 43200 Sep 25 2014 tab_cds1.fits
-rw-----. 1 morisset morisset 1458 Jun 1 2016 tab_cds1.tex
-rw-----. 1 morisset morisset 1826 Sep 28 2016 tab_cds2.ascii
-rw-----. 1 morisset morisset 4252 Nov 23 2016 Tarea1.py
-rw-----. 1 morisset morisset 7033 Nov 2 2015 test1.pdf
-rw-----. 1 morisset morisset 176673 Oct 16 2014 test_1-po
-rw-----. 1 morisset morisset 561026 Oct 26 2016 test_1-prof.png
-rw-----. 1 morisset morisset 353203 Oct 26 2016 test_1-prof.prof
-rw-----. 1 morisset morisset 6805 Oct 26 2016 test_1-prof.py
-rw-----. 1 morisset morisset 72 Sep 27 2015 test1.test
-rw-----. 1 morisset morisset 6833 Oct 26 2016 test_2-prof.py
-rw-----. 1 morisset morisset 580 Oct 26 2016 test_2-prof.py.lprof
-rw-----. 1 morisset morisset 45 Sep 27 2015 test2.test
-rw-----. 1 morisset morisset 6579 Oct 26 2016 test_3-prof.py
-rw-----. 1 morisset morisset 6524 Oct 26 2016 test_5.pdb.py
-rw-----. 1 morisset morisset 6444 Oct 26 2016 test_6.pdb.py
drwx-----. 3 morisset morisset 4096 Nov 15 2016 tt
-rw-----. 1 morisset morisset 36310 Jun 28 17:06 Useful_libraries.ipynb
-rw-----. 1 morisset morisset 99251 Jun 1 2016 Useful_libraries.pdf

```

```
-rw-----. 1 morisset morisset 149812 Sep 28 2016 Using_astropy.ipynb
-rw-----. 1 morisset morisset 195539 Jun 1 2016 Using_astropy.pdf
-rw-----. 1 morisset morisset 262324 Nov 16 2016 Using_PyMySQL.ipynb
-rw-----. 1 morisset morisset 221936 Nov 16 2016 Using_PyMySQL.pdf
```

```
In [ ]: popen = subprocess.Popen(command, stdout=subprocess.PIPE, shell=True)
        for line in iter(popen.stdout.readline, ""):
            lspl = line.split()
            if len(lspl) > 4:
                if int(lspl[4]) > 1000000:
                    print(lspl[8])
```

```
b'CALIFA_ah7.dat.gz'
b'Demo2.pickle'
b'Demo3.pickle'
b'intro_Matplotlib.ipynb'
b'intro_Matplotlib.pdf'
b'MySQL.pdf'
b'MySQL.pdf.gz'
b'n10017o.fits'
b'swp04345.mxhi'
```

1.0.5 glob

<https://docs.python.org/2/library/glob.html>

No tilde expansion is done, but *, ?, and character ranges expressed with [] will be correctly matched.

```
In [1]: from glob import glob
```

```
In [2]: ipynb_files = glob('*.ipynb')
        print(ipynb_files)
```

```
['intro_Matplotlib.ipynb', 'Ex1.done.ipynb', 'Useful_libraries.ipynb', 'Optimization.ipynb', 'Parallel.i
```

1.0.6 re

The re module provides regular expression tools for advanced string processing. For complex matching and manipulation, regular expressions offer succinct, optimized solutions:

```
In [3]: import re
        re.findall(r'\bf[a-z]*', 'which foot or hand fell fastest')
```

```
Out[3]: ['foot', 'fell', 'fastest']
```

```
In [4]: re.sub(r'(\b[a-z]+) \1', r'\1', 'cat in the the hat')
```

```
Out[4]: 'cat in the hat'
```

More in <https://docs.python.org/2/library/re.html>

1.0.7 urllib2

```
In [12]: # from urllib2 import urlopen # python 2
         from urllib.request import urlopen
```

```
In [18]: for line in urlopen('http://dev.on-rev.com/myip.irev'):
        print(line)
        if 'IP' in str(line):
            IP = str(line).split(':')[1][:7]
        print(IP)
```

```
b'<html>\n'
b'<body>\n'
b'<p>\n'
b'Remote IP Address:132.248.1.102</p>\n'
b'</body>\n'
b'</html>'
132.248.1.102
```

```
In [ ]:
```