

PS5

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1. More Linux Commands

In this exercise, we will learn a few more Linux commands. For each command, please use `man` to learn what it does and how to use it correctly. First, change your directory to `~`.

1.1 [2 points] Make a link called `data_demo_link` to `data_demo` folder using `ln`.

```
[ese-zuoxx@login01 ~]$ ln -s data_demo/ data_demo_link  
[ese-zuoxx@login01 ~]$ ls  
data_demo data_demo_link exam TEST
```

1.2 [2 points] Print your home directory using `echo`.

```
[ese-zuoxx@login01 ~]$ echo ~  
/work/ese-zuoxx
```

1.3 [2 points] Go to `data_demo/molecules/`, make an empty file `test.pdb` with `touch`.

```
[ese-zuoxx@login01 ~]$ cd data_demo/molecules/  
[ese-zuoxx@login01 molecules]$ touch test.pdb  
[ese-zuoxx@login01 molecules]$ ls  
cubane.pdb ethane.pdb methane.pdb octane.pdb pentane.pdb propane.pdb test.pdb
```

1.4 [3 points] Find how many files in `data_demo/data/elements/` using `find`.

```
[ese-zuoxx@login01 ~]$ find data_demo/data/elements/ -type f | wc -l  
103
```

1.5 [2 points] Compare `data_demo/data/pdb/ethane.pdb` and `data_demo/data/pdb/ethanol.pdb` with `diff`.

```
[ese-zuoxx@login01 ~]$ diff data_demo/data/pdb/ethane.pdb data_demo/data/pdb/ethanol.pdb
1,11c1,12
< COMPND          ETHANE
< AUTHOR          DAVE WOODCOCK  95 12 18
< ATOM            1  C              1    -0.752   0.001  -0.141   1.00   0.00
< ATOM            2  C              1     0.752  -0.001   0.141   1.00   0.00
< ATOM            3  H              1    -1.158   0.991   0.070   1.00   0.00
< ATOM            4  H              1    -1.240  -0.737   0.496   1.00   0.00
< ATOM            5  H              1    -0.924  -0.249  -1.188   1.00   0.00
< ATOM            6  H              1     1.158  -0.991  -0.070   1.00   0.00
< ATOM            7  H              1     0.924   0.249   1.188   1.00   0.00
< ATOM            8  H              1     1.240   0.737  -0.496   1.00   0.00
< TER             9
---
> COMPND          ETHANOL
> AUTHOR          DAVE WOODCOCK  96 01 03
> ATOM            1  C              1    -0.426  -0.115  -0.147   1.00   0.00
> ATOM            2  O              1    -0.599   1.244  -0.481   1.00   0.00
> ATOM            3  H              1    -0.750  -0.738  -0.981   1.00   0.00
> ATOM            4  H              1    -1.022  -0.351   0.735   1.00   0.00
> ATOM            5  H              1    -1.642   1.434  -0.689   1.00   0.00
> ATOM            6  C              1     1.047  -0.383   0.147   1.00   0.00
> ATOM            7  H              1     1.370   0.240   0.981   1.00   0.00
> ATOM            8  H              1     1.642  -0.147  -0.735   1.00   0.00
> ATOM            9  H              1     1.180  -1.434   0.405   1.00   0.00
> TER           10
```

1.6 [3 points] Count how many But she string appears in data_demo/writing/data/LittleWomen.txt with grep.

```
[ese-zuoxx@login01 ~]$ grep -c 'But she' data_demo/writing/data/LittleWomen.txt
15
```

1.7 [2 points] Check the total file size of the data_demo/data/ folder using du.

```
[ese-zuoxx@login01 ~]$ du -s data_demo/data/
719 data_demo/data/
```

1.8 [3 points] Copy the data_demo/writing/ folder to data_demo/writing_new/, compress data_demo/writing_new/ using zip, and decompress the .zip file with unzip.

```
[ese-zuoxx@login01 data_demo]$ cp data_demo/writing/ data_demo/writing_new/ -r
```

```
[ese-zuoxx@login01 ~]$ zip -q -r data_demo/writing_new.zip data_demo/writing_new/
```

```
[ese-zuoxx@login01 data_demo]$ unzip -l writing_new.zip
```

1.9 [3 points] Change the file permissions flags on writing_new to drwxr-x---using chmod.

```
[ese-zuox@login01 data_demo]$ chmod 750 writing_new/
[ese-zuox@login01 data_demo]$ ll
total 646
drwxr-xr-x 2 ese-zuox ese-zhul 4096 Nov 24 19:20 creatures
drwxr-xr-x 5 ese-zuox ese-zhul 4096 Dec 1 19:06 data
drwxr-xr-x 3 ese-zuox ese-zhul 4096 Dec 7 22:14 data_demo
-rw-r--r-- 1 ese-zuox ese-zhul 109 Dec 3 16:30 log1
-rw-r--r-- 1 ese-zuox ese-zhul 218 Dec 3 16:30 log2
drwxr-xr-x 2 ese-zuox ese-zhul 4096 Nov 27 16:11 molecules
drwxr-xr-x 3 ese-zuox ese-zhul 4096 Nov 24 19:20 north-pacific-gyre
-rwxr-xr-x 1 ese-zuox ese-zhul 69 Nov 24 19:20 notes
-rwxr-xr-x 1 ese-zuox ese-zhul 32 Nov 24 19:20 pizza.cfg
-rwxr-xr-x 1 ese-zuox ese-zhul 21583 Nov 24 19:20 solar.pdf
drwxr-xr-x 5 ese-zuox ese-zhul 4096 Nov 24 19:20 writing
drwxr-x-- 5 ese-zuox ese-zhul 4096 Dec 7 22:28 writing_new
```

1.10 [3 points] Print the last 10 commands you made using `history`.

```
[ese-zuox@login01 data_demo]$ history 10
367 ll
368 unzip -l writing_new.zip
369 ll
370 cp writing/ writing_new/ -r
371 ll
372 chmod 750 writing_new/
373 chmod 750 writing_new/
374 ll
375 history -10
376 history 10
```

2. BASH for Loop

[5 points] Write a shell script to print file size (in bytes) of each `*.pdb` file in `data_demo/data/pdb/`, line by line.

```
[ese-zuox@login01 data_demo]$ nano printfilesize.sh
```

```
GNU nano 2.3.1

for i in data/pdb/*.pdb
do
    du -b $i
done
```

```
[ese-zuox@login01 data_demo]$ chmod 750 printfilesize.sh
```

```
[ese-zuoxx@login01 data_demo]$ ./printfilesize.sh
1516 data/pdb/aldrin.pdb
306 data/pdb/ammonia.pdb
1444 data/pdb/ascorbic-acid.pdb
1030 data/pdb/benzaldehyde.pdb
1830 data/pdb/camphene.pdb
5049 data/pdb/cholesterol.pdb
1090 data/pdb/cinnamaldehyde.pdb
1694 data/pdb/citronellal.pdb
2452 data/pdb/codeine.pdb
1158 data/pdb/cubane.pdb
895 data/pdb/cyclobutane.pdb
1384 data/pdb/cyclohexanol.pdb
695 data/pdb/cyclopropane.pdb
622 data/pdb/ethane.pdb
690 data/pdb/ethanol.pdb
2396 data/pdb/ethylcyclohexane.pdb
765 data/pdb/glycol.pdb
4209 data/pdb/heme.pdb
1064 data/pdb/lactic-acid.pdb
2562 data/pdb/lactose.pdb
11193 data/pdb/lanoxin.pdb
3395 data/pdb/lsd.pdb
2562 data/pdb/maltose.pdb
2164 data/pdb/menthol.pdb
422 data/pdb/methane.pdb
490 data/pdb/methanol.pdb
1869 data/pdb/mint.pdb
2288 data/pdb/morphine.pdb
2123 data/pdb/mustard.pdb
1680 data/pdb/nerol.pdb
2729 data/pdb/norethindrone.pdb
1828 data/pdb/octane.pdb
1226 data/pdb/pentane.pdb
2287 data/pdb/piperine.pdb
825 data/pdb/propane.pdb
1256 data/pdb/pyridoxal.pdb
3303 data/pdb/quinine.pdb
2675 data/pdb/strychnine.pdb
1159 data/pdb/styrene.pdb
2562 data/pdb/sucrose.pdb
2787 data/pdb/testosterone.pdb
2196 data/pdb/thiamine.pdb
1508 data/pdb/tnt.pdb
2395 data/pdb/tuberin.pdb
2103 data/pdb/tyrian-purple.pdb
1361 data/pdb/vanillin.pdb
423 data/pdb/vinyl-chloride.pdb
2894 data/pdb/vitamin-a.pdb
[ese-zuoxx@login01 data_demo]$ █
```

Collaboration:

<https://www.runoob.com/linux/linux-tutorial.html>

https://zhu-group.github.io/ese5023/Section_12.html