

1. More Linux Commands

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

```
[ese-luoqq@login01 ~]$ ln -s data_demo data_demo_link
[ese-luoqq@login01 ~]$
[ese-luoqq@login01 ~]$ ls data_demo
creatures  err.log  job.sh  log2      north-pacific-gyre  pizza.cfg  solar.pdf  t2.py
data       job.log  log1     molecules  notes              result.log  t1.py      writing
[ese-luoqq@login01 ~]$ ls data_demo_link
creatures  err.log  job.sh  log2      north-pacific-gyre  pizza.cfg  solar.pdf  t2.py
data       job.log  log1     molecules  notes              result.log  t1.py      writing
```

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

```
[ese-luoqq@login01 ~]$ echo "$(pwd)"
/work/ese-luoqq
```

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

```
[ese-luoqq@login01 ~]$ cd data_demo/molecules/
[ese-luoqq@login01 molecules]$ pwd
/work/ese-luoqq/data_demo/molecules
[ese-luoqq@login01 molecules]$ touch test.pdb
[ese-luoqq@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.

-type - 指定要搜索的文件类型，在上面的情况下，f 表示查找所有常规文件。

```
[ese-luoqq@login01 data_demo]$ cd data/elements/
[ese-luoqq@login01 elements]$ pwd
/work/ese-luoqq/data_demo/data/elements
[ese-luoqq@login01 elements]$ man find
[ese-luoqq@login01 elements]$ ls
Ac.xml  Au.xml  Ca.xml  Cr.xml  Eu.xml  Ge.xml  Ir.xml  Lu.xml  Nd.xml  O.xml  Pt.xml  Rn.xml  Sn.xml  Th.xml  Xe.xml
Ag.xml  Ba.xml  Cd.xml  Cs.xml  Fe.xml  He.xml  I.xml  Md.xml  Ne.xml  Pa.xml  Pu.xml  Ru.xml  Sr.xml  Ti.xml  Yb.xml
Al.xml  Be.xml  Ce.xml  Cu.xml  Fm.xml  Hf.xml  Kr.xml  Mg.xml  Ni.xml  Pb.xml  P.xml  Sb.xml  S.xml  Tl.xml  Y.xml
Am.xml  Bi.xml  Cf.xml  C.xml  Fr.xml  Hg.xml  K.xml  Mn.xml  No.xml  Pd.xml  Ra.xml  Sc.xml  Ta.xml  Tm.xml  Zn.xml
Ar.xml  Bk.xml  Cl.xml  Dy.xml  F.xml  Ho.xml  La.xml  Mo.xml  Np.xml  Pm.xml  Rb.xml  Se.xml  Tb.xml  U.xml  Zr.xml
As.xml  Br.xml  Cm.xml  Er.xml  Ga.xml  H.xml  Li.xml  Na.xml  N.xml  Po.xml  Re.xml  Si.xml  Tc.xml  V.xml
At.xml  B.xml  Co.xml  Es.xml  Gd.xml  In.xml  Lr.xml  Nb.xml  Os.xml  Pr.xml  Rh.xml  Sm.xml  Te.xml  W.xml
[ese-luoqq@login01 elements]$ find -type f -print | wc -l
103
[ese-luoqq@login01 elements]$ find -type f | wc -l
103
```

激活 Windows
转到“设置”以激活 Windows。

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

```
[ese-luoqq@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-luoqq@login01 data_demo]$ cd ~
[ese-luoqq@login01 ~]$ grep "But she" ./data_demo/writing/data/LittleWomen.txt
"Oh, bless you, no! But she let old Belsham rest, and when I ran back
small quaver in her voice, "I came to thank you, sir, for..." But she
than she went. But she begged so hard, and Sallie had promised to take
    But she does not hunt as our darling did,
    But she only spits at the dogs our pet
    But she is not fair to see,
queer thing for her to do, she doesn't act a bit like herself. But she
aspirant for fame, with philosophic composure. But she made a wry face
her. But she can pet and comfort him after I'm gone, and so cure him
to see signs of hope in the faint color on Beth's cheeks. But she
But she did not get it, for though he joined her and answered all her
sketchbook. But she tucked it under her arm with a sharp...
Amy did any of these fond and foolish things. But she certainly did
But she did show something better than brilliancy or skill, for she
grasshopper. But she would have consented if he had proposed to sing a
[ese-luoqq@login01 ~]$ grep "But she" ./data_demo/writing/data/LittleWomen.txt | wc -l
15
```

Or:

```
[ese-luoqq@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-luoqq@login01 ~]$ du -c ./data_demo/data/
539    ./data_demo/data/pdb
52     ./data_demo/data/elements
1      ./data_demo/data/animal-counts
851    ./data_demo/data/
851    total
```

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-luoqq@login01 data_demo]$ cd ~
[ese-luoqq@login01 ~]$ cp -r ./data_demo/writing/ ./data_demo/writing_new/
[ese-luoqq@login01 ~]$ cd data_demo
[ese-luoqq@login01 data_demo]$ ls
creatures  err.log  job.sh  log2    north-pacific-gyre  pizza.cfg  solar.pdf  t2.py  writing_new
data       job.log  log1    molecules  notes            result.log  t1.py      writing
```

```
[ese-luoqq@login01 data_demo]$ man zip
[ese-luoqq@login01 data_demo]$ zip -r writing_new.zip ./writing_new/
adding: writing_new/ (stored 0%)
adding: writing_new/haiku.txt (deflated 29%)
adding: writing_new/tools/ (stored 0%)
adding: writing_new/tools/stats (stored 0%)
adding: writing_new/tools/old/ (stored 0%)
adding: writing_new/tools/old/oldtool (stored 0%)
adding: writing_new/tools/format (deflated 13%)
adding: writing_new/data/ (stored 0%)
adding: writing_new/data/one.txt (deflated 53%)
adding: writing_new/data/LittleWomen.txt (deflated 61%)
adding: writing_new/data/two.txt (deflated 59%)
adding: writing_new/thesis/ (stored 0%)
adding: writing_new/thesis/empty-draft.md (stored 0%)
[ese-luoqq@login01 data_demo]$ ls
creatures  err.log  job.sh  log2    north-pacific-gyre  pizza.cfg  solar.pdf  t2.py  writing_new
data       job.log  log1    molecules  notes            result.log  t1.py      writing  writing_new.zip
```

```
[ese-luoqq@login01 data_demo]$ unzip ./writing_new.zip
Archive:  ./writing_new.zip
replace writing_new/haiku.txt? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
  inflating: writing_new/haiku.txt
replace writing_new/tools/stats? [y]es, [n]o, [A]ll, [N]one, [r]ename: A
  extracting: writing_new/tools/stats
  extracting: writing_new/tools/old/oldtool
  inflating: writing_new/tools/format
  inflating: writing_new/data/one.txt
  inflating: writing_new/data/LittleWomen.txt
  inflating: writing_new/data/two.txt
  extracting: writing_new/thesis/empty-draft.md
[ese-luoqq@login01 data_demo]$ ls
creatures  err.log  job.sh  log2    north-pacific-gyre  pizza.cfg  solar.pdf  t2.py  writing_new
data       job.log  log1    molecules  notes            result.log  t1.py      writing  writing_new.zip
```

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

权限项	读	写	执行	读	写	执行	读	写	执行
字符表示	r	w	x	r	w	x	r	w	x
数字表示	4	2	1	4	2	1	4	2	1
权限分配	文件所有者			文件所属组			其他用户		

```
[ese-luoqq@login01 data_demo]$ chmod 750 ./writing_new
```

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

```
[ese-luoqq@login01 data_demo]$ history 10
575  man zip
576  zip ./writing_new/
577  man zip
578  zip -r writing_new.zip ./writing_new/
579  ls
580  unzip ./writing_new.zip
581  ls
582  chmod 750 ./writing_new
583  man history
584  history 10
```

2. BASH for Loop

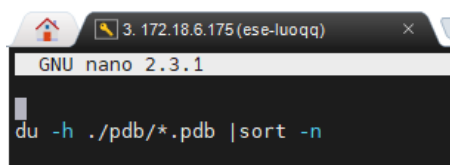
The general syntax of a BASH loop goes like:

```
for thing in list_of_things
do
    operation_using $thing
done
```

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

Don't know how to get the list_of_things in this for loop section.

```
whoami: cannot find name for user ID 2352
[ese-luoqq@login01 data]$ nano fileseize.sh
```



```
GNU nano 2.3.1
du -h ./pdb/*.pdb | sort -n
```

```
[ese-luoqq@login01 data]$ chmod 750 fileseize.sh
whoami: cannot find name for user ID 2352
[ese-luoqq@login01 data]$ ./fileseize.sh
128K ./pdb/cholesterol.pdb
128K ./pdb/heme.pdb
128K ./pdb/lanoxin.pdb
512 ./pdb/aldrin.pdb
512 ./pdb/ammonia.pdb
512 ./pdb/ascorbic-acid.pdb
512 ./pdb/benzaldehyde.pdb
512 ./pdb/camphene.pdb
512 ./pdb/cinnamaldehyde.pdb
512 ./pdb/citronellal.pdb
512 ./pdb/codeine.pdb
512 ./pdb/cubane.pdb
512 ./pdb/cyclobutane.pdb
512 ./pdb/cyclohexanol.pdb
512 ./pdb/cyclopropane.pdb
512 ./pdb/ethane.pdb
512 ./pdb/ethanol.pdb
512 ./pdb/ethylcyclohexane.pdb
512 ./pdb/glycol.pdb
512 ./pdb/lactic-acid.pdb
512 ./pdb/lactose.pdb
512 ./pdb/lsd.pdb
512 ./pdb/maltose.pdb
512 ./pdb/menthol.pdb
512 ./pdb/methane.pdb
512 ./pdb/methanol.pdb
512 ./pdb/mint.pdb
512 ./pdb/morphine.pdb
512 ./pdb/mustard.pdb
512 ./pdb/nerol.pdb
512 ./pdb/norethindrone.pdb
512 ./pdb/octane.pdb
512 ./pdb/pentane.pdb
512 ./pdb/piperine.pdb
512 ./pdb/propane.pdb
512 ./pdb/pyridoxal.pdb
512 ./pdb/quinine.pdb
512 ./pdb/strychnine.pdb
512 ./pdb/styrene.pdb
512 ./pdb/sucrose.pdb
512 ./pdb/testosterone.pdb
512 ./pdb/thiamine.pdb
512 ./pdb/tnt.pdb
512 ./pdb/tuberin.pdb
512 ./pdb/tyrian-purple.pdb
512 ./pdb/vanillin.pdb
512 ./pdb/vinyl-chloride.pdb
512 ./pdb/vitamin-a.pdb
```