

1.1

cd ~

ln -s data\_demo data\_demo\_link

```
[ese-niecl@login01 ~]$ ln -s data_demo data_demo_link
[ese-niecl@login01 ~]$ ll
total 4
drwxr-xr-x 8 ese-niecl ese-ouycc 4096 Dec  8 00:14 data_demo
lrwxrwxrwx 1 ese-niecl ese-ouycc   9 Dec  7 14:14 data_demo_link -> data_demo
drwxr-xr-x 2 ese-niecl ese-ouycc 4096 Nov  2 18:47 exam
drwxr-xr-x 2 ese-niecl ese-ouycc 4096 Dec  3 17:59 mpi_demo
-rw-r--r-- 1 ese-niecl ese-ouycc   14 Nov 24 19:57 my_file
drwxr-xr-x 2 ese-niecl ese-ouycc 4096 Nov 24 20:22 t1
drwxr-xr-x 2 ese-niecl ese-ouycc 4096 Nov 24 20:00 test
-rw-r--r-- 1 ese-niecl ese-ouycc   12 Nov 24 20:14 TESTy
```

1.2

Echo ~

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

1.3

cd data\_demo/molecules/ #1.3

touch test.pdb

```
[ese-niecl@login01 ~]$ cd data_demo/molecules/ #1.3
[ese-niecl@login01 molecules]$ touch test.pdb
[ese-niecl@login01 molecules]$ ll
total 3
-rwxr-xr-x 1 ese-niecl ese-ouycc 1158 Nov 24 19:23 cubane.pdb
-rwxr-xr-x 1 ese-niecl ese-ouycc  622 Nov 24 19:23 ethane.pdb
-rwxr-xr-x 1 ese-niecl ese-ouycc  422 Nov 24 19:23 methane.pdb
-rwxr-xr-x 1 ese-niecl ese-ouycc 1828 Nov 24 19:23 octane.pdb
-rwxr-xr-x 1 ese-niecl ese-ouycc 1226 Nov 24 19:23 pentane.pdb
-rwxr-xr-x 1 ese-niecl ese-ouycc  825 Nov 24 19:23 propane.pdb
-rw-r--r-- 1 ese-niecl ese-ouycc    0 Dec  8 00:21 test.pdb
[ese-niecl@login01 molecules]$
```

1.4

cd data\_demo/data/elements/

find . -type f -print | wc -l

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

1.5

cd ~ #1.5

cd data\_demo/data/pdb/

diff ethane.pdb ethanol.pdb

```
[ese-niecl@login01 elements]$ cd ~ #1.5
[ese-niecl@login01 ~]$ cd data_demo/data/pdb/
[ese-niecl@login01 pdb]$ diff ethane.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
[ese-niecl@login01 pdb]$
```

1.6

cd ~ #1.6

cd data\_demo/writing/data/

grep 'But she' LittleWomen.txt

```
[ese-niecl@login01 data]$ cd ~ #1.6
[ese-niecl@login01 ~]$ cd data_demo/writing/data/
[ese-niecl@login01 data]$ grep 'But she' LittleWomen.txt
"O, 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-niecl@login01 data]$
```

1.7

cd ~ #1.7

cd data\_demo/data/

du -h

```
[ese-niecl@login01 data]$ cd ~ #1.7
[ese-niecl@login01 ~]$ cd data_demo/data/
[ese-niecl@login01 data]$ du -h
17M      ./pdb
52K      ./elements
1.0K     ./animal-counts
17M      .
```

1.8

cp -r writing/ writing\_new #1.8

```
[ese-niecl@login01 data_demo]$ cp -r writing/ writing_new #1.8
[ese-niecl@login01 data_demo]$ ll
total 134
drwxr-xr-x 2 ese-niecl ese-ouycc 4096 Nov 24 19:23 creatures
drwxr-xr-x 5 ese-niecl ese-ouycc 4096 Nov 24 19:23 data
lrwxrwxrwx 1 ese-niecl ese-ouycc   9 Dec  8 00:14 data_demo -> data_demo
-rw-r--r-- 1 ese-niecl ese-ouycc  100 Dec  3 16:33 log1
-rw-r--r-- 1 ese-niecl ese-ouycc  200 Dec  3 16:33 log2
drwxr-xr-x 2 ese-niecl ese-ouycc 4096 Dec  7 14:19 molecules
drwxr-xr-x 3 ese-niecl ese-ouycc 4096 Nov 24 19:23 north-pacific-gyre
-rwxr-xr-x 1 ese-niecl ese-ouycc   69 Nov 24 19:23 notes
-rwxr-xr-x 1 ese-niecl ese-ouycc   32 Nov 24 19:23 pizza.cfg
-rwxr-xr-x 1 ese-niecl ese-ouycc 21583 Nov 24 19:23 solar.pdf
drwxr-xr-x 5 ese-niecl ese-ouycc 4096 Nov 24 19:23 writing
drwxr-xr-x 5 ese-niecl ese-ouycc 4096 Dec  8 00:34 writing_new
[ese-niecl@login01 data_demo]$
```

zip -r writing\_new.zip writing\_new/

```
[ese-niecl@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-niecl@login01 data_demo]$ ll
total 134
drwxr-xr-x 2 ese-niecl ese-ouycc 4096 Nov 24 19:23 creatures
drwxr-xr-x 5 ese-niecl ese-ouycc 4096 Nov 24 19:23 data
lrwxrwxrwx 1 ese-niecl ese-ouycc 9 Dec 8 00:14 data_demo -> 
-rw-r--r-- 1 ese-niecl ese-ouycc 100 Dec 3 16:33 log1
-rw-r--r-- 1 ese-niecl ese-ouycc 200 Dec 3 16:33 log2
drwxr-xr-x 2 ese-niecl ese-ouycc 4096 Dec 7 14:19 molecules
drwxr-xr-x 3 ese-niecl ese-ouycc 4096 Nov 24 19:23 north-pacific-gyre
-rwxr-xr-x 1 ese-niecl ese-ouycc 69 Nov 24 19:23 notes
-rwxr-xr-x 1 ese-niecl ese-ouycc 32 Nov 24 19:23 pizza.cfg
-rwxr-xr-x 1 ese-niecl ese-ouycc 21583 Nov 24 19:23 solar.pdf
drwxr-xr-x 5 ese-niecl ese-ouycc 4096 Nov 24 19:23 writing
drwxr-xr-x 5 ese-niecl ese-ouycc 4096 Dec 8 00:34 writing_new
-rw-r--r-- 1 ese-niecl ese-ouycc 422584 Dec 8 00:36 writing_new.zip
[ese-niecl@login01 data_demo]$
```

unzip writing\_new.zip

```
[ese-niecl@login01 data_demo]$ ll
total 645
drwxr-xr-x 2 ese-niecl ese-ouycc 4096 Nov 24 19:23 creatures
drwxr-xr-x 5 ese-niecl ese-ouycc 4096 Nov 24 19:23 data
lrwxrwxrwx 1 ese-niecl ese-ouycc 9 Dec 8 00:14 data_demo -> 
-rw-r--r-- 1 ese-niecl ese-ouycc 100 Dec 3 16:33 log1
-rw-r--r-- 1 ese-niecl ese-ouycc 200 Dec 3 16:33 log2
drwxr-xr-x 2 ese-niecl ese-ouycc 4096 Dec 7 14:19 molecules
drwxr-xr-x 3 ese-niecl ese-ouycc 4096 Nov 24 19:23 north-pacific-gyre
-rwxr-xr-x 1 ese-niecl ese-ouycc 69 Nov 24 19:23 notes
-rwxr-xr-x 1 ese-niecl ese-ouycc 32 Nov 24 19:23 pizza.cfg
-rwxr-xr-x 1 ese-niecl ese-ouycc 21583 Nov 24 19:23 solar.pdf
drwxr-xr-x 5 ese-niecl ese-ouycc 4096 Nov 24 19:23 writing
-rw-r--r-- 1 ese-niecl ese-ouycc 422584 Dec 8 00:36 writing_new.zip
[ese-niecl@login01 data_demo]$ unzip writing_new.zip
Archive: writing_new.zip
  creating: writing_new/
  inflating: writing_new/haiku.txt
  creating: writing_new/tools/
 extracting: writing_new/tools/stats
  creating: writing_new/tools/old/
 extracting: writing_new/tools/old/oldtool
  inflating: writing_new/tools/format
  creating: writing_new/data/
  inflating: writing_new/data/one.txt
  inflating: writing_new/data/LittleWomen.txt
  inflating: writing_new/data/two.txt
  creating: writing_new/thesis/
 extracting: writing_new/thesis/empty-draft.md
[ese-niecl@login01 data_demo]$ ll
total 646
drwxr-xr-x 2 ese-niecl ese-ouycc 4096 Nov 24 19:23 creatures
drwxr-xr-x 5 ese-niecl ese-ouycc 4096 Nov 24 19:23 data
lrwxrwxrwx 1 ese-niecl ese-ouycc 9 Dec 8 00:14 data_demo -> 
-rw-r--r-- 1 ese-niecl ese-ouycc 100 Dec 3 16:33 log1
-rw-r--r-- 1 ese-niecl ese-ouycc 200 Dec 3 16:33 log2
drwxr-xr-x 2 ese-niecl ese-ouycc 4096 Dec 7 14:19 molecules
drwxr-xr-x 3 ese-niecl ese-ouycc 4096 Nov 24 19:23 north-pacific-gyre
-rwxr-xr-x 1 ese-niecl ese-ouycc 69 Nov 24 19:23 notes
-rwxr-xr-x 1 ese-niecl ese-ouycc 32 Nov 24 19:23 pizza.cfg
-rwxr-xr-x 1 ese-niecl ese-ouycc 21583 Nov 24 19:23 solar.pdf
drwxr-xr-x 5 ese-niecl ese-ouycc 4096 Nov 24 19:23 writing
drwxr-xr-x 5 ese-niecl ese-ouycc 4096 Dec 8 00:34 writing_new
-rw-r--r-- 1 ese-niecl ese-ouycc 422584 Dec 8 00:36 writing_new.zip
```

1.9

chmod 701 wring\_new

```
[ese-niecl@login01 data_demo]$ ll
total 646
drwxr-xr-x 2 ese-niecl ese-ouycc 4096 Nov 24 19:23 creatures
drwxr-xr-x 5 ese-niecl ese-ouycc 4096 Nov 24 19:23 data
lrwxrwxrwx 1 ese-niecl ese-ouycc 9 Dec 8 00:14 data_demo -> 
-rw-r--r-- 1 ese-niecl ese-ouycc 100 Dec 3 16:33 log1
-rw-r--r-- 1 ese-niecl ese-ouycc 200 Dec 3 16:33 log2
drwxr-xr-x 2 ese-niecl ese-ouycc 4096 Dec 7 14:19 molecules
drwxr-xr-x 3 ese-niecl ese-ouycc 4096 Nov 24 19:23 north-pacific-gyre
-rwxr-xr-x 1 ese-niecl ese-ouycc 69 Nov 24 19:23 notes
-rwxr-xr-x 1 ese-niecl ese-ouycc 32 Nov 24 19:23 pizza.cfg
-rwxr-xr-x 1 ese-niecl ese-ouycc 21583 Nov 24 19:23 solar.pdf
drwxr-xr-x 5 ese-niecl ese-ouycc 4096 Nov 24 19:23 writing
drwxr-xr-x 5 ese-niecl ese-ouycc 4096 Dec 8 00:34 writing_new
-rw-r--r-- 1 ese-niecl ese-ouycc 422584 Dec 8 00:36 writing_new.zip
[ese-niecl@login01 data_demo]$ ^C
[ese-niecl@login01 data_demo]$ chmod 710 writing_new
[ese-niecl@login01 data_demo]$ ll
total 646
drwxr-xr-x 2 ese-niecl ese-ouycc 4096 Nov 24 19:23 creatures
drwxr-xr-x 5 ese-niecl ese-ouycc 4096 Nov 24 19:23 data
lrwxrwxrwx 1 ese-niecl ese-ouycc 9 Dec 8 00:14 data_demo -> 
-rw-r--r-- 1 ese-niecl ese-ouycc 100 Dec 3 16:33 log1
-rw-r--r-- 1 ese-niecl ese-ouycc 200 Dec 3 16:33 log2
drwxr-xr-x 2 ese-niecl ese-ouycc 4096 Dec 7 14:19 molecules
drwxr-xr-x 3 ese-niecl ese-ouycc 4096 Nov 24 19:23 north-pacific-gyre
-rwxr-xr-x 1 ese-niecl ese-ouycc 69 Nov 24 19:23 notes
-rwxr-xr-x 1 ese-niecl ese-ouycc 32 Nov 24 19:23 pizza.cfg
-rwxr-xr-x 1 ese-niecl ese-ouycc 21583 Nov 24 19:23 solar.pdf
drwxr-xr-x 5 ese-niecl ese-ouycc 4096 Nov 24 19:23 writing
drwx--x-- 5 ese-niecl ese-ouycc 4096 Dec 8 00:34 writing_new
-rw-r--r-- 1 ese-niecl ese-ouycc 422584 Dec 8 00:36 writing_new.zip
[ese-niecl@login01 data_demo]$
```

1.10

history 10

```
[ese-niecl@login01 data_demo]$ history 10
495 ll
496 unzip writing_new.zip
497 ll
498 rm writing_new
499 ll
500 unzip writing_new.zip
501 ll
502 chmod 710 writing_new
503 ll
504 history 10
[ese-niecl@login01 data_demo]$
```

2

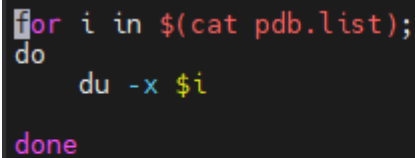
nano loop.sh

```
for i in $(cat pdb.list);
```

```
do
```

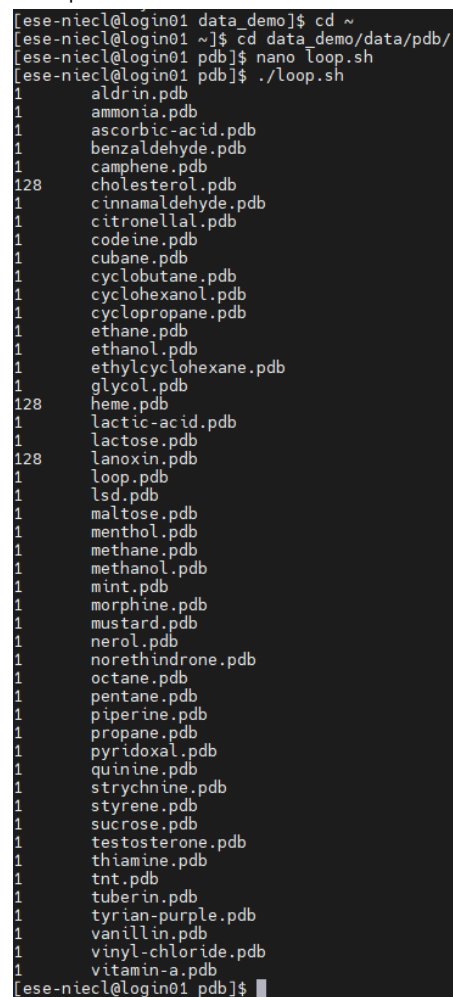
```
du -x $i
```

```
done
```

A screenshot of a terminal window showing the content of the file loop.sh. The text is: for i in \$(cat pdb.list); do du -x \$i done. The text is color-coded: 'for' is red, 'do' is blue, 'du' is green, '-x' is yellow, '\$i' is green, and 'done' is red.

```
for i in $(cat pdb.list);  
do  
    du -x $i  
done
```

./loop.sh

A screenshot of a terminal window showing the execution of the script ./loop.sh. The terminal shows the user navigating to the directory ~/data\_demo/data/pdb/ and running the script. The output is a list of files and their sizes in KB, with some files having a size of 128 KB. The list includes: aldrin.pdb, ammonia.pdb, ascorbic-acid.pdb, benzaldehyde.pdb, camphene.pdb, cholesterol.pdb, cinnamaldehyde.pdb, citronellal.pdb, codeine.pdb, cubane.pdb, cyclobutane.pdb, cyclohexanol.pdb, cyclopropane.pdb, ethane.pdb, ethanol.pdb, ethylcyclohexane.pdb, glycol.pdb, heme.pdb, lactic-acid.pdb, lactose.pdb, lanoxin.pdb, loop.pdb, lsd.pdb, maltose.pdb, menthol.pdb, methane.pdb, methanol.pdb, mint.pdb, morphine.pdb, mustard.pdb, nerol.pdb, norethindrone.pdb, octane.pdb, pentane.pdb, piperine.pdb, propane.pdb, pyridoxal.pdb, quinine.pdb, strychnine.pdb, styrene.pdb, sucrose.pdb, testosterone.pdb, thiamine.pdb, tnt.pdb, tuberin.pdb, tyrian-purple.pdb, vanillin.pdb, vinyl-chloride.pdb, vitamin-a.pdb.

```
[ese-niecl@login01 data_demo]$ cd ~  
[ese-niecl@login01 ~]$ cd data_demo/data/pdb/  
[ese-niecl@login01 pdb]$ nano loop.sh  
[ese-niecl@login01 pdb]$ ./loop.sh  
1 aldrin.pdb  
1 ammonia.pdb  
1 ascorbic-acid.pdb  
1 benzaldehyde.pdb  
1 camphene.pdb  
128 cholesterol.pdb  
1 cinnamaldehyde.pdb  
1 citronellal.pdb  
1 codeine.pdb  
1 cubane.pdb  
1 cyclobutane.pdb  
1 cyclohexanol.pdb  
1 cyclopropane.pdb  
1 ethane.pdb  
1 ethanol.pdb  
1 ethylcyclohexane.pdb  
1 glycol.pdb  
128 heme.pdb  
1 lactic-acid.pdb  
1 lactose.pdb  
128 lanoxin.pdb  
1 loop.pdb  
1 lsd.pdb  
1 maltose.pdb  
1 menthol.pdb  
1 methane.pdb  
1 methanol.pdb  
1 mint.pdb  
1 morphine.pdb  
1 mustard.pdb  
1 nerol.pdb  
1 norethindrone.pdb  
1 octane.pdb  
1 pentane.pdb  
1 piperine.pdb  
1 propane.pdb  
1 pyridoxal.pdb  
1 quinine.pdb  
1 strychnine.pdb  
1 styrene.pdb  
1 sucrose.pdb  
1 testosterone.pdb  
1 thiamine.pdb  
1 tnt.pdb  
1 tuberin.pdb  
1 tyrian-purple.pdb  
1 vanillin.pdb  
1 vinyl-chloride.pdb  
1 vitamin-a.pdb  
[ese-niecl@login01 pdb]$
```