1.1

```
[ese-jianglj@login02 ~]$ ln -s data_demo data_demo_link
[ese-jianglj@login02 ~]$ ls
data_demo  data_demo_link  exam
```

1.2

```
[ese-jianglj@login02 ~]$ ~
-bash: /work/ese-jianglj: Is a directory
[ese-jianglj@login02 ~]$ echo '/work/ese-jianglj/'
/work/ese-jianglj/
[ese-jianglj@login02 ~]$
```

1.3

```
[ese-jianglj@login02 ~]$ cd ~/data_demo/molecules
[ese-jianglj@login02 molecules]$ touch test.pdb
[ese-jianglj@login02 molecules]$ ls
cubane.pdb  ethane.pdb  methane.pdb  octane.pdb  pentane.pdb  propane.pdb  test.pdb
[ese-jianglj@login02 molecules]$
```

1.4

```
[ese-jianglj@login02 molecules]$ find ~/data_demo/data/elements | wc -l
104
[ese-jianglj@login02 molecules]$
```

1.5

```
> TER        10           1
[ese-jianglj@login02 pdb]$ cd ~/data_demo/data/pdb
[ese-jianglj@login02 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           1
---
> 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
[ese-jianglj@login02 pdb]$
```

1.6

```
[ese-jianglj@login02 pdb]$ cd ~/data_demo/writing/data
[ese-jianglj@login02 data]$ grep -c 'But she' LittleWomen.txt
15
```

1.7

```
[ese-jianglj@login02 data]$ du ~/data_demo/data
407     /work/ese-jianglj/data_demo/data/pdb
52      /work/ese-jianglj/data_demo/data/elements
1       /work/ese-jianglj/data_demo/data/animal-coun
719     /work/ese-jianglj/data_demo/data
[ese-jianglj@login02 data]$ du ~/data_demo/data -s
719     /work/ese-jianglj/data_demo/data
[ese-jianglj@login02 data]$
```

1.8

```
[ese-jianglj@login02 data]$ cd ~/data_demo/
[ese-jianglj@login02 data_demo]$ cp writing writing_new
cp: omitting directory 'writing'
[ese-jianglj@login02 data_demo]$ cp -r writing writing_new
[ese-jianglj@login02 data_demo]$ zip -q -r writing_new.zip writing_new
[ese-jianglj@login02 data_demo]$ ls
creatures  data  log1  log2  molecules  north-pacific-gyre  notes  pizza.cfg  solar.pdf  thesis  writing  writing_new  writing_new.zip
[ese-jianglj@login02 data_demo]$ unzip -q writing_new.zip -d writing_new_from_zip
[ese-jianglj@login02 data_demo]$ ls
creatures  log1  molecules         notes      solar.pdf  writing       writing_new_from_zip
data       log2  north-pacific-gyre  pizza.cfg  thesis   writing_new  writing_new.zip
```

1.9

```
[ese-jianglj@login03 ~]$ cd ~/data_demo/
[ese-jianglj@login03 data_demo]$ ll
total 646
drwxr-xr-x 2 ese-jianglj ese-ouycc   4096 Nov 24 19:23 creatures
drwxr-xr-x 5 ese-jianglj ese-ouycc   4096 Nov 24 19:23 data
-rw-r--r-- 1 ese-jianglj ese-ouycc    596 Dec  3 16:41 log1
-rw-r--r-- 1 ese-jianglj ese-ouycc    100 Dec  3 16:32 log2
drwxr-xr-x 2 ese-jianglj ese-ouycc   4096 Dec  6 17:09 molecules
drwxr-xr-x 3 ese-jianglj ese-ouycc   4096 Nov 24 19:23 north-pacific-gyre
-rwxr-xr-x 1 ese-jianglj ese-ouycc     69 Nov 24 19:23 notes
-rwxr-xr-x 1 ese-jianglj ese-ouycc     32 Nov 24 19:23 pizza.cfg
-rwxr-xr-x 1 ese-jianglj ese-ouycc  21583 Nov 24 19:23 solar.pdf
drwxr-xr-x 3 ese-jianglj ese-ouycc   4096 Nov 24 20:37 thesis
drwxr-xr-x 5 ese-jianglj ese-ouycc   4096 Nov 24 19:23 writing
drwx--x--- 5 ese-jianglj ese-ouycc   4096 Dec  6 18:13 writing_new
drwxr-xr-x 3 ese-jianglj ese-ouycc   4096 Dec  6 18:14 writing_new_from_zip
-rw-r--r-- 1 ese-jianglj ese-ouycc 422584 Dec  6 18:13 writing_new.zip
[ese-jianglj@login03 data_demo]$ chmod 710 writing_new
[ese-jianglj@login03 data_demo]$ ll
total 646
drwxr-xr-x 2 ese-jianglj ese-ouycc   4096 Nov 24 19:23 creatures
drwxr-xr-x 5 ese-jianglj ese-ouycc   4096 Nov 24 19:23 data
-rw-r--r-- 1 ese-jianglj ese-ouycc    596 Dec  3 16:41 log1
-rw-r--r-- 1 ese-jianglj ese-ouycc    100 Dec  3 16:32 log2
drwxr-xr-x 2 ese-jianglj ese-ouycc   4096 Dec  6 17:09 molecules
drwxr-xr-x 3 ese-jianglj ese-ouycc   4096 Nov 24 19:23 north-pacific-gyre
-rwxr-xr-x 1 ese-jianglj ese-ouycc     69 Nov 24 19:23 notes
-rwxr-xr-x 1 ese-jianglj ese-ouycc     32 Nov 24 19:23 pizza.cfg
-rwxr-xr-x 1 ese-jianglj ese-ouycc  21583 Nov 24 19:23 solar.pdf
drwxr-xr-x 3 ese-jianglj ese-ouycc   4096 Nov 24 20:37 thesis
drwxr-xr-x 5 ese-jianglj ese-ouycc   4096 Nov 24 19:23 writing
drwx--x--- 5 ese-jianglj ese-ouycc   4096 Dec  6 18:13 writing_new
drwxr-xr-x 3 ese-jianglj ese-ouycc   4096 Dec  6 18:14 writing_new_from_zip
-rw-r--r-- 1 ese-jianglj ese-ouycc 422584 Dec  6 18:13 writing_new.zip
[ese-jianglj@login03 data_demo]$
```
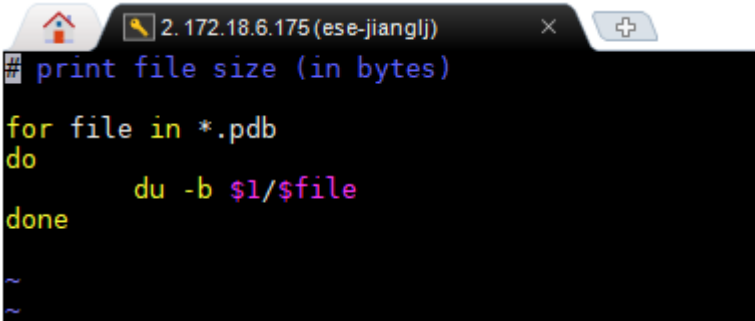
1.10

```
[ese-jianglj@login03 data_demo]$ history | tail -n 10
   99  cd ~/data_demo
  100  ll
  101  chomd 710 writing_new
  102  chmod 710 writing_new
  103  ll
  104  cd ~/data_demo/
  105  ll
  106  chmod 710 writing_new
  107  ll
  108  history | tail -n 10
[ese-jianglj@login03 data_demo]$
```

2.

```
[ese-jianglj@login02 pdb]$ vi file_size.sh
[ese-jianglj@login02 pdb]$ chmod 750 file_size.sh
[ese-jianglj@login02 pdb]$ ./file_size.sh ~/data_demo/data/pdb/ | head -n 5
1516    /work/ese-jianglj/data_demo/data/pdb//aldrin.pdb
306     /work/ese-jianglj/data_demo/data/pdb//ammonia.pdb
1444    /work/ese-jianglj/data_demo/data/pdb//ascorbic-acid.pdb
1030    /work/ese-jianglj/data_demo/data/pdb//benzaldehyde.pdb
1830    /work/ese-jianglj/data_demo/data/pdb//camphene.pdb
[ese-jianglj@login02 pdb]$
```

The codes in file_size.sh

```
2. 172.18.6.175 (ese-jianglj)

# print file size (in bytes)

for file in *.pdb
do
        du -b $1/$file
done

~
~
```