Assgiment05 ESE5023

陈鹏翰 12132191

1.More Linux Command

1.1 Make a link called `data_demo_link` to `data_demo` folder using `ln`.

```
[ese-chenph@login01 ~]$ ls
data_demo  exam  job.sh  lyx.py  ps.py  t2.py  xyl.sh
[ese-chenph@login01 ~]$ ln -s data_demo data_demo_link
[ese-chenph@login01 ~]$ ls
data_demo  data_demo_link  exam  job.sh  lyx.py  ps.py  t2.py  xyl.sh
```

1.2 Print your home directory using `echo`

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

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

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

1.4 Find how many files in `data_demo/data/elements/` using `find`.

```
[ese-chenph@login01 ~]$ find data_demo/data/elements/ -name "*.*" | wc -l
103
```

1.5 Compare `data_demo/data/pdb/ethane.pdb` and `data_demo/data/pdb/ethanol.pdb` with `diff`.

```
[ese-chenph@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              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
```

1.6 Count how many `But she` string appears in `data_demo/writing/data/LittleWomen.txt` with `grep`.

```
[ese-chenph@login01 ~]$ grep "But she" data_demo/writing/data/LittleWomen.txt -o | wc -l
15
```

1.7 Check the total file size of the `data_demo/data/` folder using `du`

```
[ese-chenph@login01 ~]$ du data_demo/data -c
409     data_demo/data/pdb
52      data_demo/data/elements
1       data_demo/data/animal-counts
721     data_demo/data
721     total
```

1.8 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-chenph@login01 ~]$ cp -f -r data_demo/writing data_demo/writing_new/
[ese-chenph@login01 ~]$ cd data_demo
[ese-chenph@login01 data_demo]$ ls
creatures  molecules           notes      solar.pdf  writing
data       north-pacific-gyre  pizza.cfg  temp       writing_new
```

```
[ese-chenph@login01 data_demo]$ zip -r -q zipfile.zip writing_new
[ese-chenph@login01 data_demo]$ ls
creatures  molecules           notes      sdas       temp     writing_new
data       north-pacific-gyre  pizza.cfg  solar.pdf  writing  zipfile.zip
```

```
[ese-chenph@login01 data_demo]$ rm -r writing_new
[ese-chenph@login01 data_demo]$ ls
creatures  molecules           notes      sdas       temp     zipfile.zip
data       north-pacific-gyre  pizza.cfg  solar.pdf  writing
[ese-chenph@login01 data_demo]$ unzip -q zipfile.zip
[ese-chenph@login01 data_demo]$ ls
creatures  molecules           notes      sdas       temp     writing_new
data       north-pacific-gyre  pizza.cfg  solar.pdf  writing  zipfile.zip
```

1.9 Change the file permissions flags on `writing_new` to `drwxr-x---` using `chmod`.

```
[ese-chenph@login01 data_demo]$ chmod 750 writing_new/
[ese-chenph@login01 data_demo]$ ll
total 1029
drwxr-xr-x 2 ese-chenph ese-ouycc   4096 Dec  2 12:16 creatures
drwxr-xr-x 5 ese-chenph ese-ouycc   4096 Dec  2 12:16 data
drwxr-xr-x 2 ese-chenph ese-ouycc   4096 Dec  2 12:17 molecules
drwxr-xr-x 3 ese-chenph ese-ouycc   4096 Dec  2 12:16 north-pacific-gyre
-rwxr-xr-x 1 ese-chenph ese-ouycc     76 Dec  2 12:16 notes
-rwxr-xr-x 1 ese-chenph ese-ouycc     32 Dec  2 12:16 pizza.cfg
-rwxr-xr-x 1 ese-chenph ese-ouycc    218 Dec  2 16:12 sdas
-rwxr-xr-x 1 ese-chenph ese-ouycc  21583 Dec  2 12:16 solar.pdf
-rw-r--r-- 1 ese-chenph ese-ouycc     20 Dec  2 12:16 temp
drwxr-xr-x 5 ese-chenph ese-ouycc   4096 Dec  2 16:07 writing
drwxr-x--- 6 ese-chenph ese-ouycc   4096 Dec  3 09:45 writing_new
-rw-r--r-- 1 ese-chenph ese-ouycc 845354 Dec  3 09:48 zipfile.zip
```

1.10 Print the last `10` commands you made using `history`.

```
[ese-chenph@login01 data_demo]$ history | tail -10
  574  unzip -q zipfile.zip
  575  ls
  576  ll
  577  chmod 750 -r writing_new/
  578  man chmod
  579  chmod +750 -r writing_new/
  580  chmod 750 writing_new/
  581  ll
  582  history
  583  history | tail -10
```

2.BASH `for` Loop

First, create and edit `loop.sh`

```
[ese-chenph@login01 ~]$ vi loop.sh
```

Then, type code below, when finished, type `:wq` to quit

```
#!/bin/bash
for file in data_demo/data/pdb/*.pdb
do
     du -b $file
done
```

Finally, type and show the result (first 10 head)

```
[ese-chenph@login01 ~]$ ./loop.sh | head -10
1516    data_demo/data/pdb/aldrin.pdb
306     data_demo/data/pdb/ammonia.pdb
1444    data_demo/data/pdb/ascorbic-acid.pdb
1030    data_demo/data/pdb/benzaldehyde.pdb
1830    data_demo/data/pdb/camphene.pdb
5049    data_demo/data/pdb/cholesterol.pdb
1090    data_demo/data/pdb/cinnamaldehyde.pdb
1694    data_demo/data/pdb/citronellal.pdb
2452    data_demo/data/pdb/codeine.pdb
1158    data_demo/data/pdb/cubane.pdb
```