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#1-1 create a link

```
[ese-dengwh@login02 ~]$ ln -s data_demo data_demo_link
[ese-dengwh@login02 ~]$ ls
data_demo  data_demo_link  exam
[ese-dengwh@login02 ~]$ ls -s
total 2
1 data_demo  1 data_demo_link  1 exam
```

#1-2 echo

```
[ese-dengwh@login02 ~]$ echo "This is the list of directories and files on this
system: $(ls)"
This is the list of directories and files on this system: data_demo
data_demo_link
exam
```

#1-3 touch

```
[ese-dengwh@login02 molecules]$ touch test.pdb
[ese-dengwh@login02 molecules]$ ls
cubane.pdb  ethane.pdb  methane.pdb  octane.pdb  pentane.pdb  propane.pdb  test.pdb
```

#1-4 find

```
[ese-dengwh@login02 elements]$ cd ~
[ese-dengwh@login02 ~]$ cd data_demo/data/elements/
[ese-dengwh@login02 elements]$ find . -type f -print | wc -l
103
```

#1-5 diff

```
[ese-dengwh@login02 ~]$ cd data_demo
[ese-dengwh@login02 data_demo]$ cd data
[ese-dengwh@login02 data]$ cd pdb
[ese-dengwh@login02 pdb]$ diff ethane.pdb ethanol.pdb -y -W 50
COMPND      ETHANE    | COMPND      ETHANOL
AUTHOR      DAVE WOOD | AUTHOR      DAVE WOOD
ATOM      1  C        | ATOM      1  C
ATOM      2  C        | ATOM      2  O
ATOM      3  H        | ATOM      3  H
ATOM      4  H        | ATOM      4  H
ATOM      5  H        | ATOM      5  H
ATOM      6  H        | ATOM      6  C
ATOM      7  H        | ATOM      7  H
ATOM      8  H        | ATOM      8  H
TER       9           | ATOM      9  H
                      > TER      10
END                   | END
```

#1-6 grep

```
[ese-dengwh@login02 ~]$ cd data_demo
[ese-dengwh@login02 data_demo]$ ls
creatures  data  data_demo_link  molecules  my_file  north-pacific-gyre  notes  pizza.cfg  solar.pdf  test  TEST  writing
[ese-dengwh@login02 data_demo]$ cd writing
[ese-dengwh@login02 writing]$ ls
data  haiku.txt  thesis  tools
[ese-dengwh@login02 writing]$ cd data
[ese-dengwh@login02 data]$ ls
LittleWomen.txt  one.txt  two.txt
[ese-dengwh@login02 data]$ grep -r "But she" 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-dengwh@login02 data]$ grep -r "But she" LittleWomen.txt | wc -l
15
```

#1-7 du

```
[ese-dengwh@login02 ~]$ cd data_demo
[ese-dengwh@login02 data_demo]$ cd data
[ese-dengwh@login02 data]$ ls
amino-acids.txt  animal-counts  animals.txt  elements  morse.txt  pdb  planets.txt  salmon.txt  sunspot.txt
[ese-dengwh@login02 data]$ du
407     ./pdb
52      ./elements
1       ./animal-counts
719     .
```

#1-8 cp, zip, unzip

```
[ese-dengwh@login02 ~]$ cd data_demo
[ese-dengwh@login02 data_demo]$ cp -r writing/ writing_new
[ese-dengwh@login02 data_demo]$ ls
creatures       longest.sh  north-pacific-gyre  solar.pdf  writing
data            molecules   notes               test       writing_new
data_demo_link  my_file     pizza.cfg           TEST       writing_new.zip
```

```
[ese-dengwh@login02 data_demo]$ zip -q -r writing_new.zip writing_new
[ese-dengwh@login02 data_demo]$ unzip -q -n writing_new.zip
```

#1-9 chmod

```
[ese-dengwh@login02 data_demo]$ chmod 750 writing_new
[ese-dengwh@login02 data_demo]$ ll
total 647
drwxr-xr-x 2 ese-dengwh ese-ouycc   4096 Nov 24 19:21 creatures
drwxr-xr-x 5 ese-dengwh ese-ouycc   4096 Dec  1 20:37 data
lrwxrwxrwx 1 ese-dengwh ese-ouycc     14 Dec  1 08:48 data_demo_link -> data_dem
o_link
-rwxr-x--- 1 ese-dengwh ese-ouycc     52 Dec  1 20:31 longest.sh
drwxr-xr-x 2 ese-dengwh ese-ouycc   4096 Dec  1 15:36 molecules
-rw-r--r-- 1 ese-dengwh ese-ouycc      6 Nov 24 20:02 my_file
drwxr-xr-x 3 ese-dengwh ese-ouycc   4096 Nov 24 19:21 north-pacific-gyre
-rwxr-xr-x 1 ese-dengwh ese-ouycc     69 Nov 24 19:21 notes
-rwxr-xr-x 1 ese-dengwh ese-ouycc     32 Nov 24 19:21 pizza.cfg
-rwxr-xr-x 1 ese-dengwh ese-ouycc  21583 Nov 24 19:21 solar.pdf
drwxr-xr-x 2 ese-dengwh ese-ouycc   4096 Nov 24 19:57 test
drwxr-xr-x 5 ese-dengwh ese-ouycc   4096 Nov 24 21:25 TEST
drwxr-xr-x 5 ese-dengwh ese-ouycc   4096 Nov 24 19:21 writing
drwxr-x--- 6 ese-dengwh ese-ouycc   4096 Dec  2 18:52 writing_new
-rw-r--r-- 1 ese-dengwh ese-ouycc 422584 Dec  1 17:52 writing_new.zip
```

#1-10 history

```
[ese-dengwh@login02 pdb]$ history 10
  308  history
  309  history 10
  310  cd data_demo
  311  ls
  312  cd data
  313  ls
  314  cd pdb
  315  ls
  316  diff heme.pdb aldrin.pdb -y -W 50
  317  history 10
```

2. BASH `for` Loop

First, go to data_demo/data/pdb, and nano a .sh file named a2.sh:

```
[ese-dengwh@login02 ~]$ cd data_demo/data/pdb
[ese-dengwh@login02 pdb]$ nano a2.sh
```

And type cods in a2.sh:

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

Then, do the following commands:

```
[ese-dengwh@login02 pdb]$ chmod 750 a2.sh
[ese-dengwh@login02 pdb]$ ./a2.sh
```

Finally, we can get the following result:

```
1516    aldrin.pdb
306     ammonia.pdb
1444    ascorbic-acid.pdb
1030    benzaldehyde.pdb
1830    camphene.pdb
5049    cholesterol.pdb
1090    cinnamaldehyde.pdb
1694    citronellal.pdb
2452    codeine.pdb
1158    cubane.pdb
895     cyclobutane.pdb
1384    cyclohexanol.pdb
695     cyclopropane.pdb
622     ethane.pdb
690     ethanol.pdb
2396    ethylcyclohexane.pdb
765     glycol.pdb
4209    heme.pdb
1064    lactic-acid.pdb
2562    lactose.pdb
11193   lanoxin.pdb
3395    lsd.pdb
2562    maltose.pdb
2164    menthol.pdb
422     methane.pdb
490     methanol.pdb
1869    mint.pdb
2288    morphine.pdb
2123    mustard.pdb
1680    nerol.pdb
2729    norethindrone.pdb
1828    octane.pdb
1226    pentane.pdb
2287    piperine.pdb
825     propane.pdb
1256    pyridoxal.pdb
3303    quinine.pdb
2675    strychnine.pdb
1159    styrene.pdb
2562    sucrose.pdb
```

```
11193   lanoxin.pdb
3395    lsd.pdb
2562    maltose.pdb
2164    menthol.pdb
422     methane.pdb
490     methanol.pdb
1869    mint.pdb
2288    morphine.pdb
2123    mustard.pdb
1680    nerol.pdb
2729    norethindrone.pdb
1828    octane.pdb
1226    pentane.pdb
2287    piperine.pdb
825     propane.pdb
1256    pyridoxal.pdb
3303    quinine.pdb
2675    strychnine.pdb
1159    styrene.pdb
2562    sucrose.pdb
2787    testosterone.pdb
2196    thiamine.pdb
1508    tnt.pdb
2395    tuberin.pdb
2103    tyrian-purple.pdb
1361    vanillin.pdb
423     vinyl-chloride.pdb
2894    vitamin-a.pdb
```