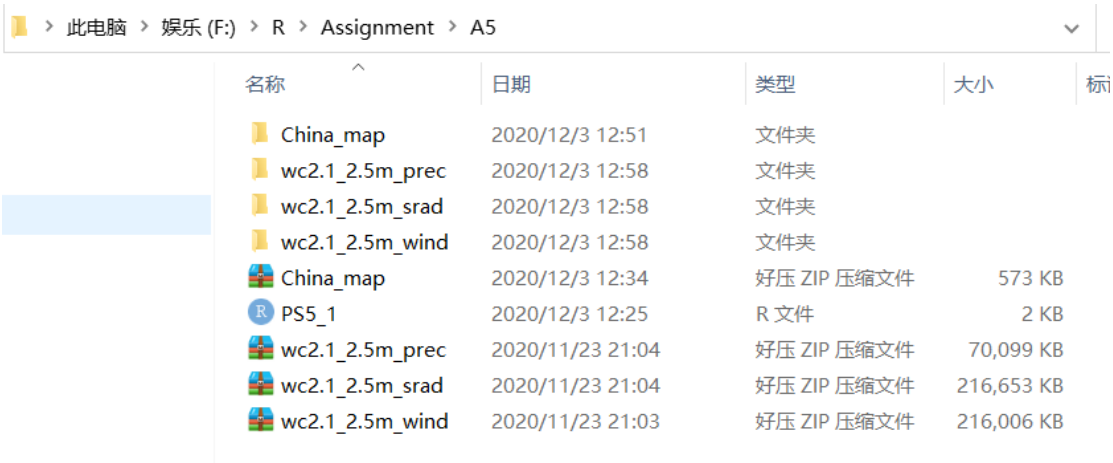
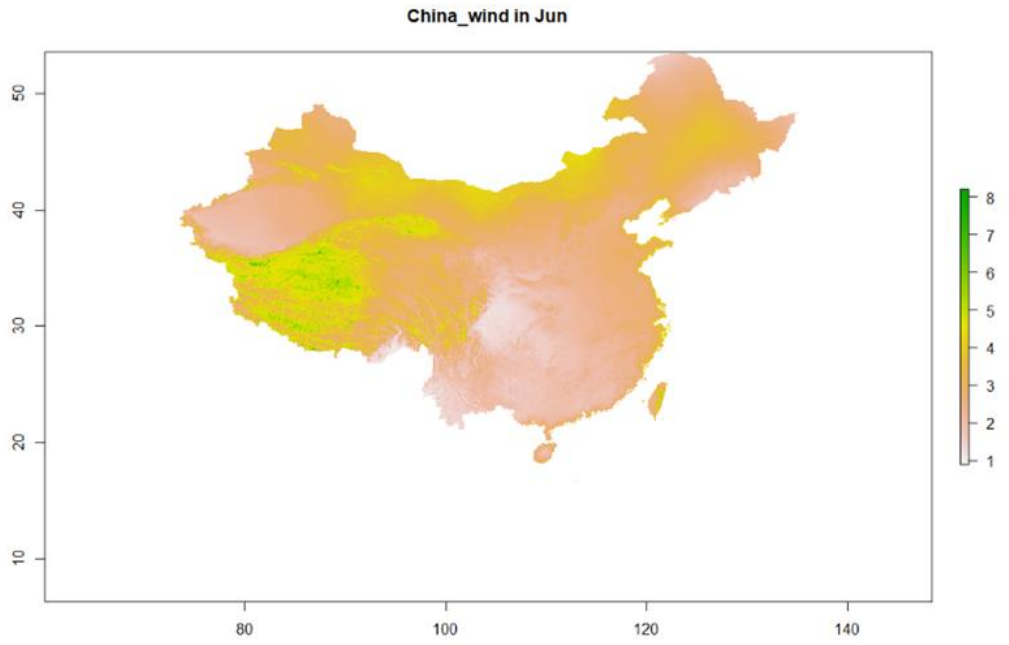
1 见截图，所有思考过程及问题答案和描述都在里面：

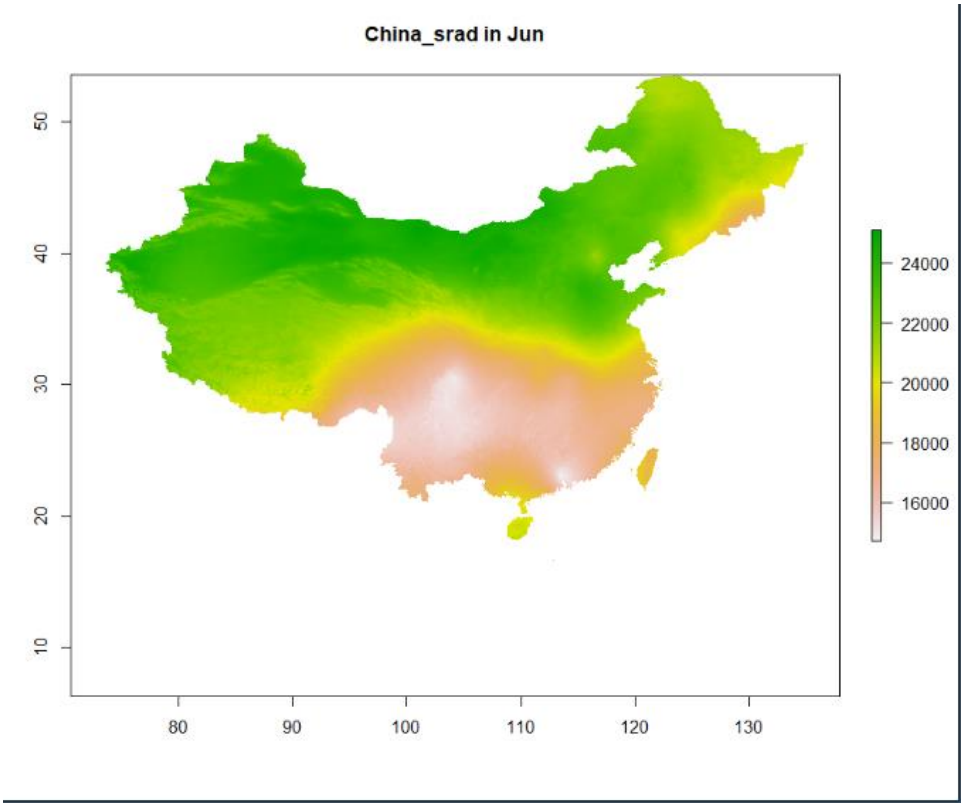
1.1 数据下载

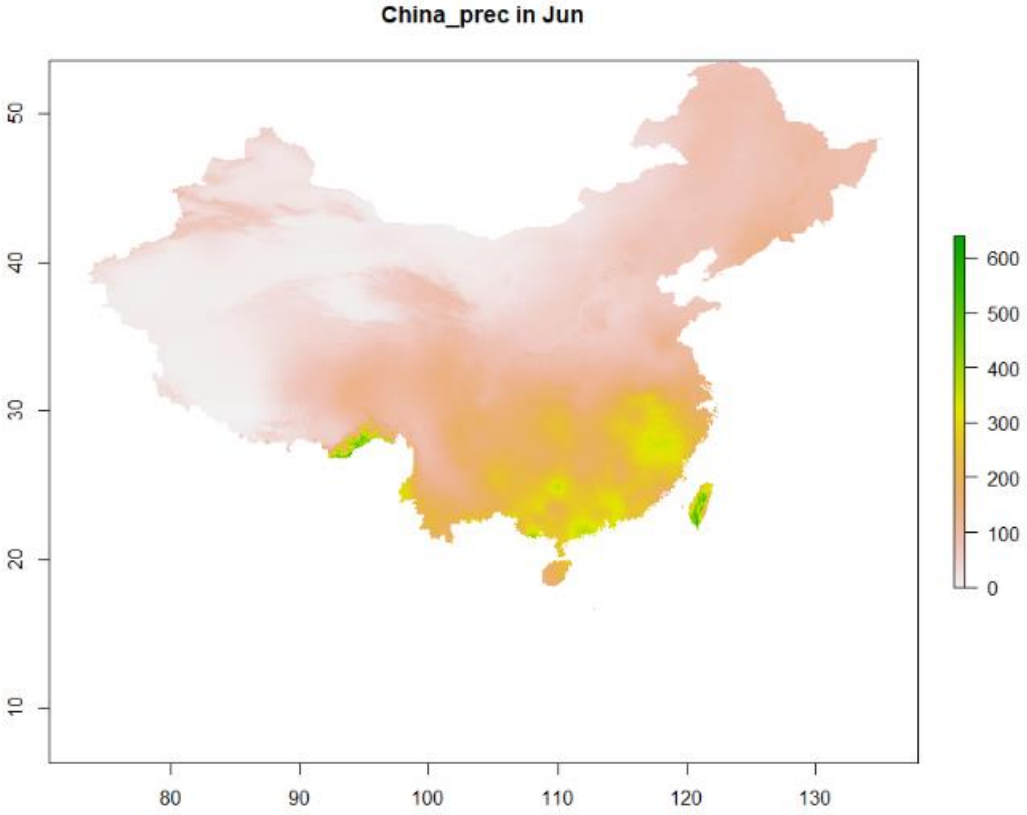


1.2

```
#1.1
#见文件夹截图
#1.2
China_map <- readOGR("F:/R/Assignment/A5/China_map", "bou2_4p")
#六月处于夏季，一般降雨等条件较丰富，所以以六月为例
Myraster <- raster('F:/R/Assignment/A5/wc2.1_2.5m_wind/wc2.1_2.5m_wind_06.tif')
myraster_prec <- raster("F:/R/Assignment/A5/wc2.1_2.5m_prec/wc2.1_2.5m_prec_06.
myraster_srad <- raster("F:/R/Assignment/A5/wc2.1_2.5m_srad/wc2.1_2.5m_srad_06.
plot(Myraster,main="Wind in Jun")
R_crop <- crop(Myraster,China_map)
R_mask <- mask(R_crop,China_map)
crop_prec <- crop(myraster_prec,China_map)
crop_srad <- crop(myraster_srad,China_map)
mask_prec <- mask(crop_prec,China_map)
mask_srad <- mask(crop_srad,China_map)
#mask()参考了"R语言论坛"的帖子
plot(R_mask, main="China_wind in Jun")
plot(mask_prec, main="China_prec in Jun")
plot(mask_srad, main="China_srad in Jun")
```

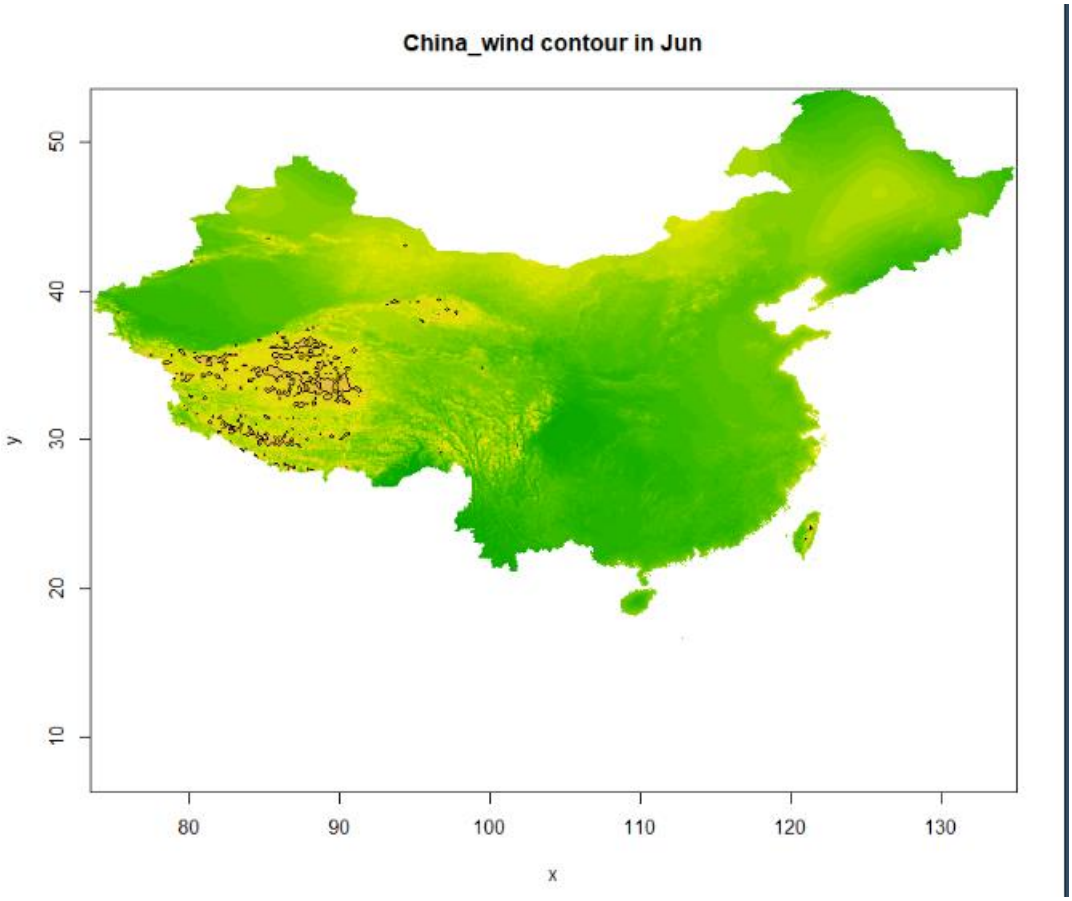



China_srad in Jun
50
40
30
20
10
80
90
100
110
120
130
24000
22000
20000
18000
16000


China_prec in Jun
50
40
30
20
10
80
90
100
110
120
130
600
500
400
300
200
100
0

1.3

```
#1.3
R_mask
#image
#set color
col <- terrain.colors(30)
image(R_mask, col=col, main="China_wind contour in Jun")
contour(R_mask, add=T, level=5, col="black")
#查看max最大为9.844，level高于5以后画图基本看不出来，所以选择5
#选址位于世界"第三极"——青藏高原地区、高原以北等地（建起来难度可能有点大）
```

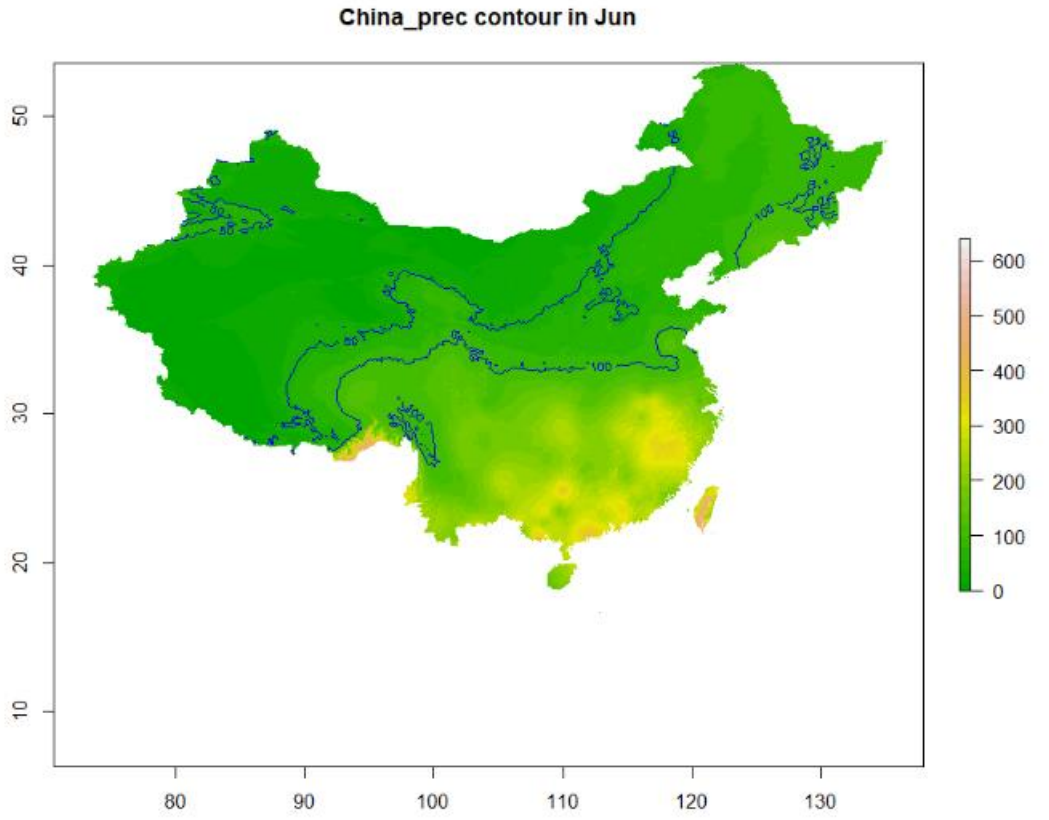


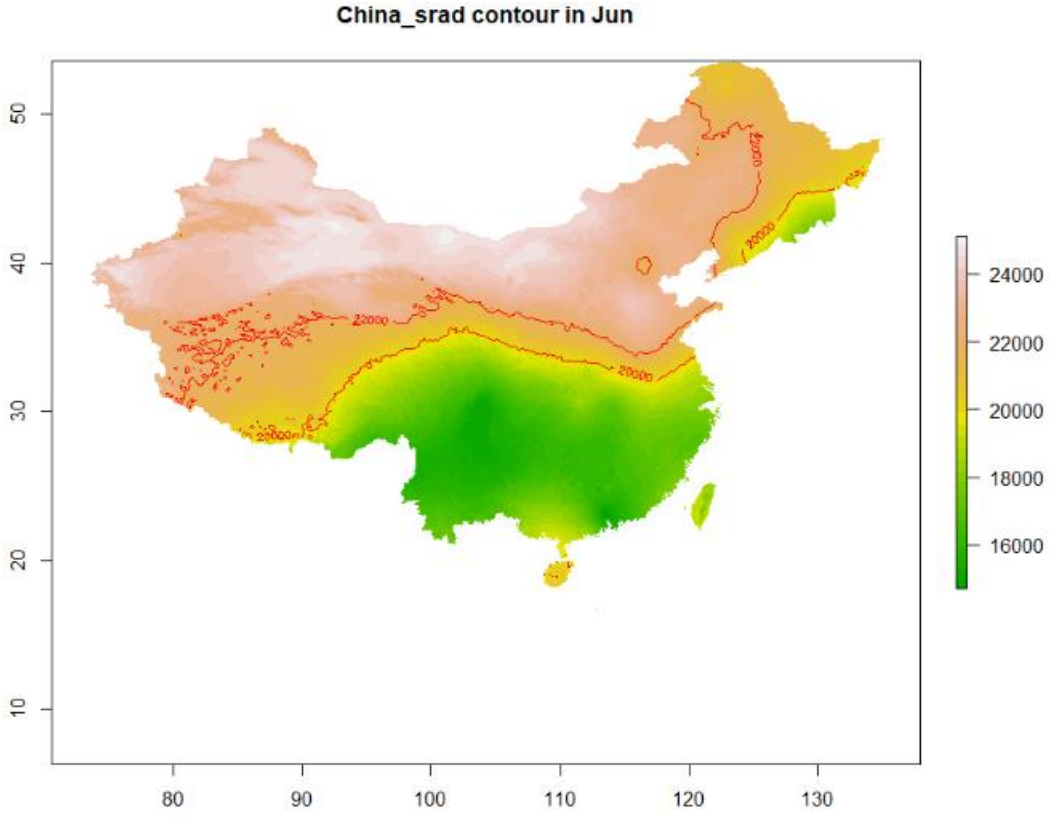
1.4

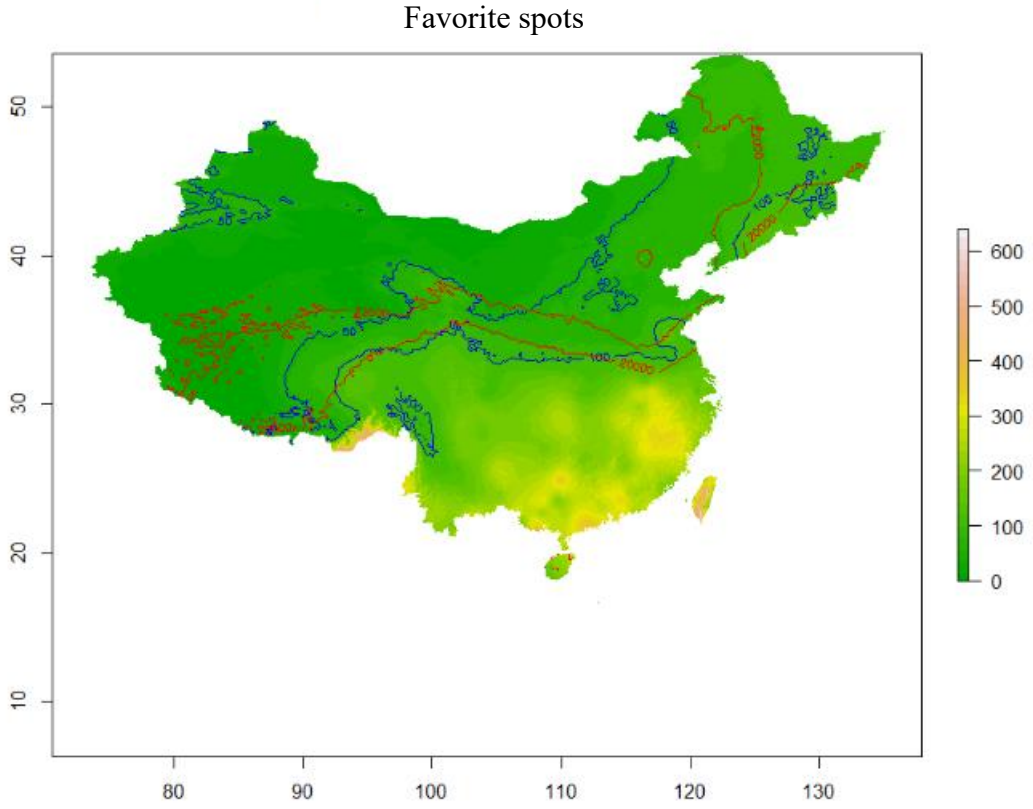
```
#1.4
myraster_prec <- raster("F:/R/Assignment/A5/wc2.1_2.5m_prec/wc2.1_2.5m_prec_06
myraster_srad <- raster("F:/R/Assignment/A5/wc2.1_2.5m_srad/wc2.1_2.5m_srad_06
crop_prec <- crop(myraster_prec,China_map)
crop_srad <- crop(myraster_srad,China_map)
mask_prec <- mask(crop_prec,China_map)
mask_srad <- mask(crop_srad,China_map)

myraster_prec
#最小值为0，最大值为2226，经过调试，选址介于50-100之间
plot(mask_prec, col=col, main="China_prec contour in Jun")
contour(mask_prec, add=T, col="blue", level=100)
contour(mask_prec, add=T, col="blue", level=50)

myraster_srad
#values : 0, 30552(min, max)，选址在20000和22000之间
plot(mask_srad, col=col, main="China_srad contour in Jun")
contour(mask_srad, add=T, level=20000, col="red")
contour(mask_srad, add=T, level=22000, col="red")
#如图，两者交叉区域可作为PV farms选址
```


China_prec contour in Jun
50
40
30
20
10
80
90
100
110
120
130
600
500
400
300
200
100
0


China_srad contour in Jun
50
40
30
20
10
80
90
100
110
120
130
24000
22000
20000
18000
16000



2 结合讲义，同时也在网络资源上学习到了一些命令的具体用法，如下：

2.1 目录已经改为 ~，目录只能建立软链接，ln 命令用法为 ln -s 源文件 目标文件（-s 是 symbolic 的意思）

Code: $ ln -s data_demo data_demo_link

```
[ese-liny@login03 ~]$ ls
billing_report  data_demo  exam
[ese-liny@login03 ~]$ ln -s data_demo data_demo_link
[ese-liny@login03 ~]$ ls
billing_report  data_demo  data_demo_link  exam
```

2.2 *Code: $ touch planets.txt_lst*

```
[ese-liny@login03 ~]$ cd data_demo/data
[ese-liny@login03 data]$ touch planets.txt_lst
[ese-liny@login03 data]$ ls
amino-acids.txt  animals.txt  morse.txt  planets.txt      salmon.txt
animal-counts    elements     pdb        planets.txt_lst  sunspot.txt
```

2.3 *Code: $ echo ~*

```
[ese-liny@login03 data]$ echo ~
/work/ese-liny
```

2.4 *Code: $ find data_demo/data/pdb/ -type f | wc -l*

```
[ese-liny@login03 ~]$ find data_demo/data/pdb/ -type f | wc -l
50
```

2.5 *Code: $ cd data_demo/data/pdb*

$ grep -o C tnt.pdb | wc -l

```
[ese-liny@login03 ~]$ grep data_demo/data/pdb/tnt.pdb -o C | wc -l
grep: C: No such file or directory
0
[ese-liny@login03 ~]$ grep data_demo/data/pdb -o C tnt.pdb | wc -l
grep: C: No such file or directory
grep: tnt.pdb: No such file or directory
0
[ese-liny@login03 ~]$ cd data_demo/data/pdb
[ese-liny@login03 pdb]$ grep -o C tnt.pdb | wc -l
10
```

2.6 *Code:$ diff ethane.pdb ethanol.pdb*

```
[ese-liny@login03 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
```

2.7 *Code:$ du data_demo* *(结果：4193)*

```
[ese-liny@login03 pdb]$ cd ~
[ese-liny@login03 ~]$ df data_demo
Filesystem        1K-blocks          Used    Available Use% Mounted on
work          536911806464 179244548096 357667258368  34% /work
[ese-liny@login03 ~]$ du data_demo
4       data_demo/molecules
1       data_demo/writing/tools/old
2       data_demo/writing/tools
1281    data_demo/writing/data
1       data_demo/writing/thesis
1285    data_demo/writing
2050    data_demo/north-pacific-gyre/2012-07-03
2051    data_demo/north-pacific-gyre
2       data_demo/creatures
408     data_demo/data/pdb
52      data_demo/data/elements
1       data_demo/data/animal-counts
720     data_demo/data
2       data_demo/thesis
4193    data_demo
```

2.8 参考了“落日峡谷”的 cnblogs.com

Code: $ cp -r data_demo data_demo_new

```
[ese-liny@login03 ~]$ cp -r data_demo data_demo_new
[ese-liny@login03 ~]$ zip -r data_demo_new.zip data_demo_new
```

Code:$ ls

```
[ese-liny@login03 ~]$ ls
billing_report  data_demo  data_demo_link  data_demo_new  data_demo_new.zip  exam
```

Code:$ unzip data_demo_new.zip　　(后面输入 A)

```
[ese-liny@login03 ~]$ unzip data_demo_new.zip
Archive:  data_demo_new.zip
replace data_demo_new/molecules/methane.pdb? [y]es, [n]o, [A]ll, [N]one, [r]ename: ly
error:  invalid response [ly]
replace data_demo_new/molecules/methane.pdb? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
  inflating: data_demo_new/molecules/methane.pdb
replace data_demo_new/molecules/pentane.pdb? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
  inflating: data_demo_new/molecules/pentane.pdb
replace data_demo_new/molecules/cubane.pdb? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
  inflating: data_demo_new/molecules/cubane.pdb
replace data_demo_new/molecules/ethane.pdb? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
  inflating: data_demo_new/molecules/ethane.pdb
replace data_demo_new/molecules/propane.pdb? [y]es, [n]o, [A]ll, [N]one, [r]ename: A
```

2.9 *Code:$ chomd 750 data_demo_new　　(计算为 7 5 0)*

```
[ese-liny@login03 ~]$ ll
total 643
drwxr-xr-x 2 root     root        4096 Sep 26 15:20 billing_report
drwxr-xr-x 8 ese-liny ese-ouycc   4096 Dec  3 16:39 data_demo
lrwxrwxrwx 1 ese-liny ese-ouycc      9 Dec  3 16:34 data_demo_link -> data_demo
drwxr-xr-x 8 ese-liny ese-ouycc   4096 Dec  3 17:43 data_demo_new
-rw-r--r-- 1 ese-liny ese-ouycc 583998 Dec  3 17:35 data_demo_new.zip
drwxr-xr-x 2 ese-liny ese-ouycc   4096 Nov 26 19:04 exam
[ese-liny@login03 ~]$ chmod 750 data_demo_new
[ese-liny@login03 ~]$ ll
total 643
drwxr-xr-x 2 root     root        4096 Sep 26 15:20 billing_report
drwxr-xr-x 8 ese-liny ese-ouycc   4096 Dec  3 16:39 data_demo
lrwxrwxrwx 1 ese-liny ese-ouycc      9 Dec  3 16:34 data_demo_link -> data_demo
drwxr-x--- 8 ese-liny ese-ouycc   4096 Dec  3 17:43 data_demo_new
-rw-r--r-- 1 ese-liny ese-ouycc 583998 Dec  3 17:35 data_demo_new.zip
drwxr-xr-x 2 ese-liny ese-ouycc   4096 Nov 26 19:04 exam
```

2.10 *Code:$ history 10*

```
[ese-liny@login03 ~]$ history 10
  207  zip -r data_demo_new.zip data_demo_new
  208  cp -r data_demo data_demo_new
  209  [ese-liny@login03 ~]$ zip -r data_demo_new.zip data_demo_new
  210  ls
  211  cp -r data_demo data_demo_new
  212  unzip data_demo_new.zip
  213  ll
  214  chmod 750 data_demo_new
  215  ll
  216  history 10
```