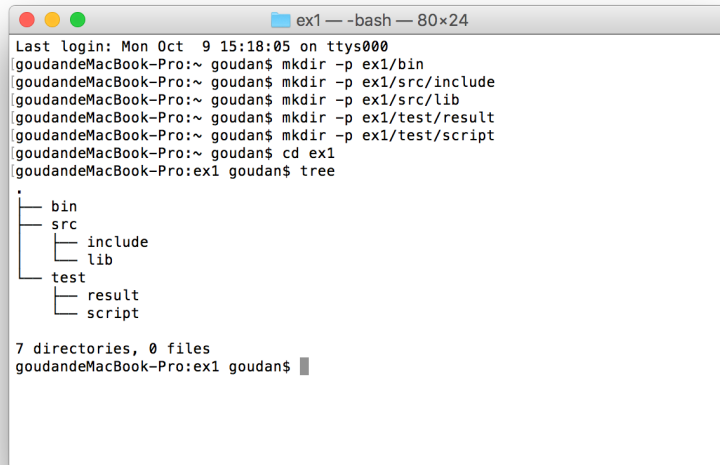1.Tab for auto complete

Option -p create parent dir if it not exist

```
● ● ●                    📁 ex1 — -bash — 80×24
Last login: Mon Oct  9 15:18:05 on ttys000
[goudandeMacBook-Pro:~ goudan$ mkdir -p ex1/bin                               ]
[goudandeMacBook-Pro:~ goudan$ mkdir -p ex1/src/include                       ]
[goudandeMacBook-Pro:~ goudan$ mkdir -p ex1/src/lib                           ]
[goudandeMacBook-Pro:~ goudan$ mkdir -p ex1/test/result                       ]
[goudandeMacBook-Pro:~ goudan$ mkdir -p ex1/test/script                       ]
[goudandeMacBook-Pro:~ goudan$ cd ex1                                         ]
[goudandeMacBook-Pro:ex1 goudan$ tree                                         ]
.
├── bin
├── src
│   ├── include
│   └── lib
└── test
    ├── result
    └── script

7 directories, 0 files
goudandeMacBook-Pro:ex1 goudan$ █
```

2.

  (Hard links are not allowed for directories, so I creat the hard link of "test01.txt" instead of "test01")

①

```
● ● ●                    🗂 test01 — -bash — 80×24
Last login: Mon Oct  9 15:18:56 on ttys000
[goudandeMacBook-Pro:~ goudan$ mkdir test01                              ]
[goudandeMacBook-Pro:~ goudan$ cp test01.txt test01                     ]
[goudandeMacBook-Pro:~ goudan$ cd test01                                ]
[goudandeMacBook-Pro:test01 goudan$ tree                                ]
.
└── test01.txt

0 directories, 1 file
goudandeMacBook-Pro:test01 goudan$ █
```

② ~ ④ :

```
● ● ●                    🏠 kivygogh — -bash — 80×31
[goudandeMacBook-Pro:~ goudan$ ln test01/test01.txt ex1/test/t1         ]
[goudandeMacBook-Pro:~ goudan$ ln ex1/test/t1 ex1/bin/t2                ]
[goudandeMacBook-Pro:~ goudan$ ls -l -R ex1                             ]
total 0
drwxr-xr-x  3 goudan  staff  102 10  9 18:20 bin
drwxr-xr-x  4 goudan  staff  136 10  9 15:19 src
drwxr-xr-x  6 goudan  staff  204 10  9 18:20 test

ex1/bin:
total 8
-rw-r--r--@ 3 goudan  staff  1868 10  9 15:26 t2

ex1/src:
total 0
drwxr-xr-x  2 goudan  staff  68 10  9 15:19 include
drwxr-xr-x  2 goudan  staff  68 10  9 15:19 lib

ex1/src/include:

ex1/src/lib:

ex1/test:
total 8
drwxr-xr-x  2 goudan  staff    68 10  9 15:19 result
drwxr-xr-x  2 goudan  staff    68 10  9 15:19 script
-rw-r--r--@ 3 goudan  staff  1868 10  9 15:26 t1

ex1/test/result:

ex1/test/script:
goudandeMacBook-Pro:~ goudan$ █
```

⑤ ex1:

.   5   for itself,parent dir,bin,src,test

..   18   parent dir

bin   2   itself,parent(ex1)

src   4   itself,parent(ex1),include,lib

test   4   itself,parent(ex1),result,script

ex1/bin:

.   2   for itself,parent (no link for t2,link in don't have the link from the parent dir)

..   5   parent dir(ex1) have 5 link
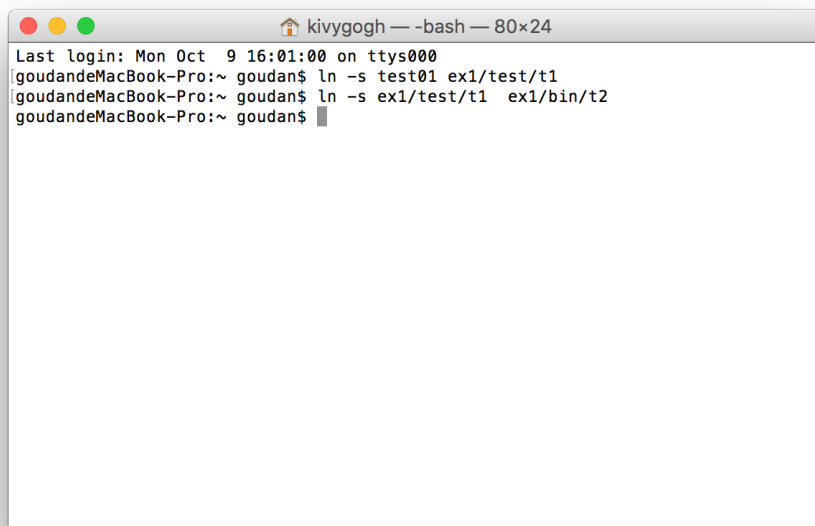
t2   3   three link to text01(t1,t2,text01)

ex1/src:

.   2   for itself,parent,include,lib

..   5   parent dir(ex1) have 5 link

Include   2   itself,parent

lib   2   itself,parent

⑥It will works.The actual deletion of the file is that all hard link files associated with it are deleted.

3.
①~②:

```
● ● ●                    🏠 kivygogh — -bash — 80×24
Last login: Mon Oct  9 16:01:00 on ttys000
[goudandeMacBook-Pro:~ goudan$ ln -s test01 ex1/test/t1           ]
[goudandeMacBook-Pro:~ goudan$ ln -s ex1/test/t1  ex1/bin/t2      ]
goudandeMacBook-Pro:~ goudan$ ▮
```

③：No limit

④：

```
[goudandeMacBook-Pro:~ goudan$ ln -s ex1/bin/t2 ex1/bin/t3            ]
[goudandeMacBook-Pro:~ goudan$ ln -s ex1/bin/t3 ex1/bin/t4            ]
[goudandeMacBook-Pro:~ goudan$ ls -l -R ex1                           ]
total 0
drwxr-xr-x  5 goudan  staff  170 10  9 16:58 bin
drwxr-xr-x  4 goudan  staff  136 10  9 15:19 src
drwxr-xr-x  6 goudan  staff  204 10  9 16:18 test

ex1/bin:
total 24
lrwxr-xr-x  1 goudan  staff  11 10  9 16:19 t2 -> ex1/test/t1
lrwxr-xr-x  1 goudan  staff  10 10  9 16:58 t3 -> ex1/bin/t2
lrwxr-xr-x  1 goudan  staff  10 10  9 16:58 t4 -> ex1/bin/t3

ex1/src:
total 0
drwxr-xr-x  2 goudan  staff  68 10  9 15:19 include
drwxr-xr-x  2 goudan  staff  68 10  9 15:19 lib

ex1/src/include:

ex1/src/lib:

ex1/test:
total 8
drwxr-xr-x  2 goudan  staff  68 10  9 15:19 result
drwxr-xr-x  2 goudan  staff  68 10  9 15:19 script
lrwxr-xr-x  1 goudan  staff   6 10  9 16:11 t1 -> test01

ex1/test/result:

ex1/test/script:
goudandeMacBook-Pro:~ goudan$ 
```

⑤：

Historically, the first Unix filesystem created two entries in every directory: .
pointing to the directory itself, and .. pointing to its parent. This provided
an easy way to traverse the filesystem, both for applications and for the OS
itself.

Thus each directory has a link count of 2+n where n is the number of
subdirectories. The links are the entry for that directory in its parent, the
directory's own
   . entry, and the .. entry in each subdirectory.

⑥ Can not display. Beacause the origin file has been deletd.

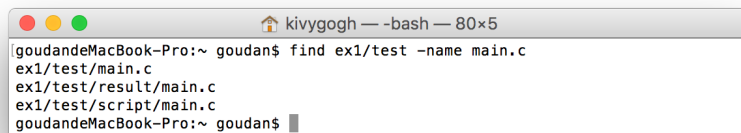⑦ rm -rf *

4.

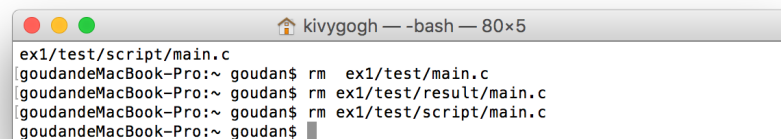①:

```c
#include < stdio.h >
  void main(int argc, char *argv[]) {
      FILE * p;
      char ch;
      int w = 1;
      clrscr();
      p = fopen(argv[1], "r+");
      if (p == NULL) {
          printf("file not found");
      } else {
          ch = fgetc(p);
          while (ch != EOF) {
              printf("%c", ch);
              if (ch == ' ' || ch == '\n') {
                  w++;
              }
              ch = fgetc(p);
          }
          printf("\nWords in a file are=%d", w);
      }
      fclose(p);
      getch();
  }
```

②:

```
● ● ●              🏠 kivygogh — -bash — 80×5
[goudandeMacBook-Pro:~ goudan$ find ex1/test -name main.c
ex1/test/main.c
ex1/test/result/main.c
ex1/test/script/main.c
goudandeMacBook-Pro:~ goudan$ ▊
```

```
● ● ●              🏠 kivygogh — -bash — 80×5
ex1/test/script/main.c
[goudandeMacBook-Pro:~ goudan$ rm  ex1/test/main.c
[goudandeMacBook-Pro:~ goudan$ rm ex1/test/result/main.c
[goudandeMacBook-Pro:~ goudan$ rm ex1/test/script/main.c
goudandeMacBook-Pro:~ goudan$ ▊
```

③:

cp creates another copy of the file on disk. On the other hand mv renames
the file. The original file gets a new name.

mv also used to move a file or set of files to a directory.

ex: mv *.c dirname

command **mv oldname newname** just gives the new name to file oldname

This is the diff between cp and mv

④:

`gcc -Wall` enables all compiler's warning messages. This option should always be used, in order to generate better code.
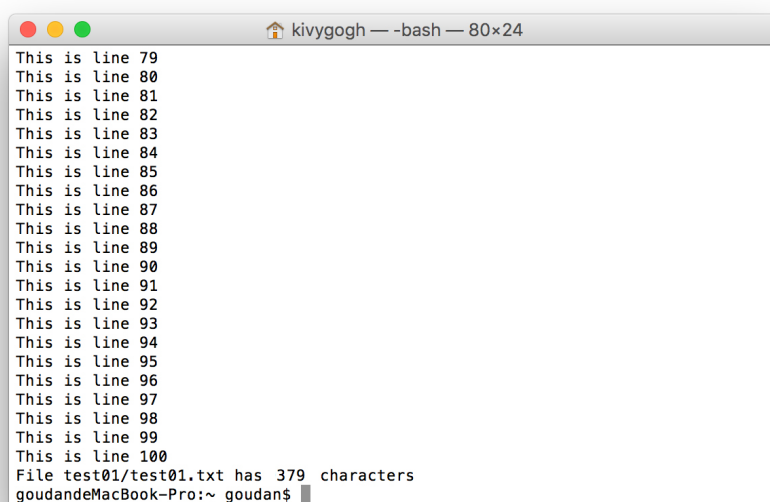
⑤:

```
[goudandeMacBook-Pro:~ goudan$ find myWC
 myWC
 goudandeMacBook-Pro:~ goudan$ █
```

⑥:

5.

①:

```
This is line 79
This is line 80
This is line 81
This is line 82
This is line 83
This is line 84
This is line 85
This is line 86
This is line 87
This is line 88
This is line 89
This is line 90
This is line 91
This is line 92
This is line 93
This is line 94
This is line 95
This is line 96
This is line 97
This is line 98
This is line 99
This is line 100
File test01/test01.txt has 379 characters
goudandeMacBook-Pro:~ goudan$ █
```

②:

If I don't use the full name, computer will go to find the executable file in root directory.

③:

```
goudandeMacBook-Pro:~ goudan$ wc test01/test01.txt
     100      379    1868 test01/test01.txt
goudandeMacBook-Pro:~ goudan$ ▉
```


④:

wc -w test01/test01.txt