

(1) Task 1

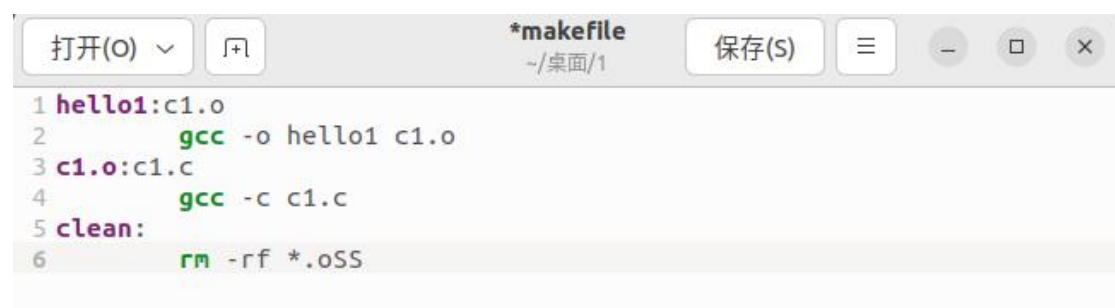
(1) Write a C program that uses standard I/O libraries to display the contents of text files. The program is compiled and linked by the make tool, which requires the generation of the.o file first, and then the generation of the executable file, and the function of deleting the intermediate file (.o) in the makefile file.

```
#include <stdio.h>
int main(int argc, char* argv[])
{
    char buf[1024] = { 0 };
    FILE* fp = fopen(argv[1], "r");
    if (argc < 2)
    {
        printf("please input source file!\n");
    }
    if (fp == NULL)
    {
        printf("open source %s failed\n", argv[1]);
        return -1;
    }
    while (fgets(buf, 1024, fp))
    {
        printf("%s\n", buf);
    }
    return 0;
}
```

Make sure your filename is c1.c

We can use the following makefile.

```
hello1:c1.o
gcc -o hello1 c1.o
c1.o:c1.c
gcc -c c1.c
clean:
rm -rf *.o
```



```
b22040517@b22040517-virtual-machine: ~/桌面/1
b22040517@b22040517-virtual-machine:~/桌面/1$ echo B22040517周凯
B22040517周凯
b22040517@b22040517-virtual-machine:~/桌面/1$ ls
c1.c  makefile
b22040517@b22040517-virtual-machine:~/桌面/1$ make
gcc -c c1.c
gcc -o hello1 c1.o
b22040517@b22040517-virtual-machine:~/桌面/1$ ls
c1.c  c1.o  hello1  makefile
b22040517@b22040517-virtual-machine:~/桌面/1$ ./hello1
please input source file!
open source (null) failed
b22040517@b22040517-virtual-machine:~/桌面/1$ touch text.txt
b22040517@b22040517-virtual-machine:~/桌面/1$ ./hello1 text.txt
Hello wolrd!

b22040517@b22040517-virtual-machine:~/桌面/1$
```

(2) Task 2

(2) Write a C program that displays all the file names in the current directory. The program is compiled and linked by the make tool, which requires the generation of the .o file first, and then the generation of the executable file, and the function of deleting the intermediate file (.o) in the makefile file.

```
include <stdio.h>
include <dirent.h>
include <sys/types.h>
int main(int argc, char* argv[])
{
    DIR* dirp;
    struct dirent* direntp;
    if ((dirp = opendir(argv[1])) == NULL) {
        printf("error\n");
        // exit(1);
    }
    while ((direntp = readdir(dirp)) != NULL)
        printf("%s\n", direntp->d_name);
    closedir(dirp);
    // exit(0);
}
```

Make sure your filename is c2.c

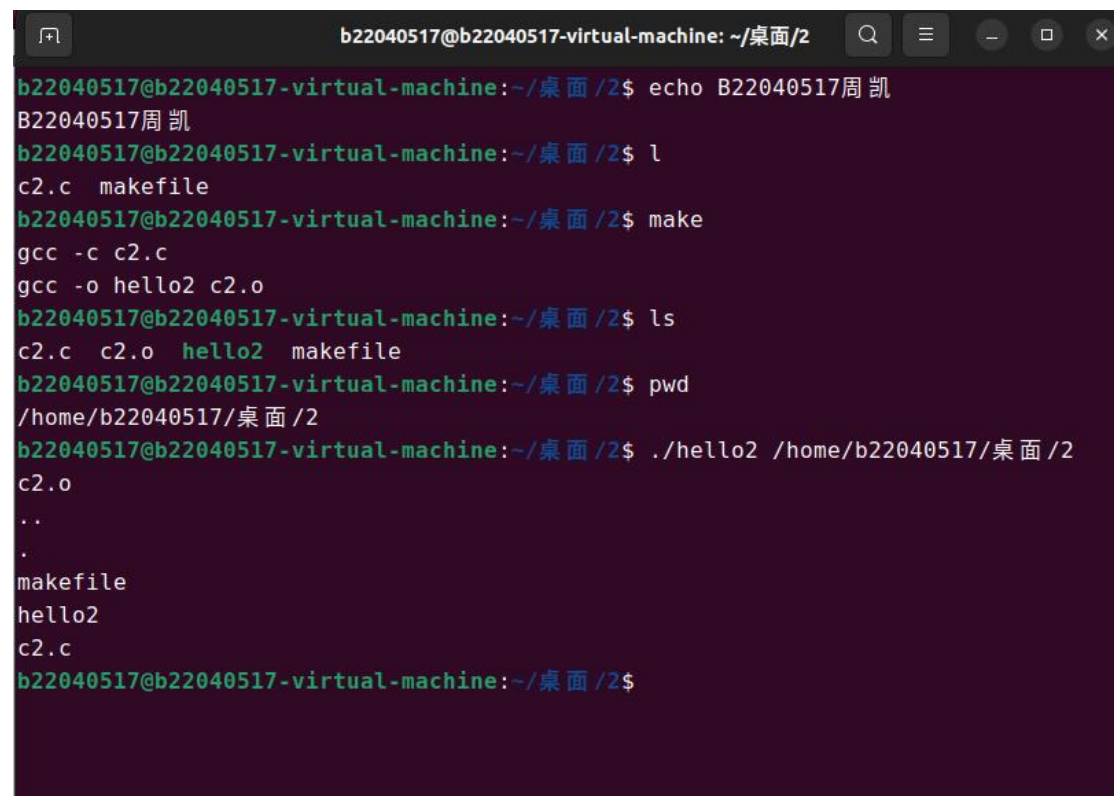
We can use the following makefile.

```
hello2:c2.o
gcc -o hello1 c2.o
c2.o:c2.c
gcc -c c2.c
clean:
rm -rf *.o
```



The screenshot shows a text editor window with the title 'makefile' and a path '~ /桌面/2'. The editor contains the following text:

```
1 hello2:c2.o
2     gcc -o hello2 c2.o
3 c2.o:c2.c
4     gcc -c c2.c
5 clean:
6     rm -rf *.o
7
```



The screenshot shows a terminal window with the title 'b22040517@b22040517-virtual-machine: ~/桌面/2'. The terminal output is as follows:

```
b22040517@b22040517-virtual-machine:~/桌面/2$ echo B22040517周凯
B22040517周凯
b22040517@b22040517-virtual-machine:~/桌面/2$ l
c2.c  makefile
b22040517@b22040517-virtual-machine:~/桌面/2$ make
gcc -c c2.c
gcc -o hello2 c2.o
b22040517@b22040517-virtual-machine:~/桌面/2$ ls
c2.c  c2.o  hello2  makefile
b22040517@b22040517-virtual-machine:~/桌面/2$ pwd
/home/b22040517/桌面/2
b22040517@b22040517-virtual-machine:~/桌面/2$ ./hello2 /home/b22040517/桌面/2
c2.o
..
.
makefile
hello2
c2.c
b22040517@b22040517-virtual-machine:~/桌面/2$
```

(3) Task 3

(3) Write a C program that changes the working directory of the current process. The program is compiled and linked by the make tool, which requires the generation of the.o file first, and then the generation of the executable file, and the function of deleting the intermediate file (.o) in the makefile file.

```
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
int main(){
    char buf[1024] = {0}; char buf2[1024]={0};
    getcwd(buf, 1024);
    printf("%s\n", buf);
    if(chdir("/home")<0){
        printf("error\n");
    }
    else
    {
        printf("success\n");
    }
    getcwd(buf2,1024);
    printf("%s\n",buf2);
    return 0;
}
```

Make sure your filename is c3.c

We can use the following makefile.

```
hello3:c3.o
gcc -o hello1 c3.o
c3.o:c3.c
gcc -c c3.c
clean:
rm -rf *.o
```



```
b22040517@b22040517-virtual-machine: ~/桌面/3
b22040517@b22040517-virtual-machine:~/桌面/3$ echo B22040517周凯
B22040517周凯
b22040517@b22040517-virtual-machine:~/桌面/3$ ls
c3.c  makefile
b22040517@b22040517-virtual-machine:~/桌面/3$ make
gcc -c c3.c
gcc -o hello3 c3.o
b22040517@b22040517-virtual-machine:~/桌面/3$ ls
c3.c  c3.o  hello3  makefile
b22040517@b22040517-virtual-machine:~/桌面/3$ ./hello3
/home/b22040517/桌面/3
success
/home
b22040517@b22040517-virtual-machine:~/桌面/3$
```