(1) Task 1

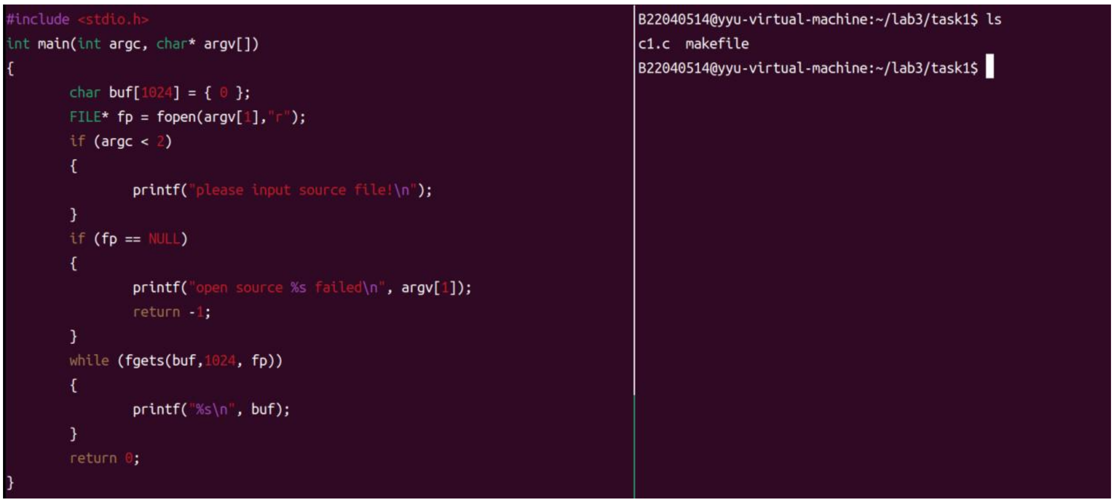
(1) Write a C program that uses standard I/O libraries to display the contents of text files. The program is compiled and linked by the make tool, which requires the generation of the.o file first, and then the generation of the executable file, and the function of deleting the intermediate file (.o)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

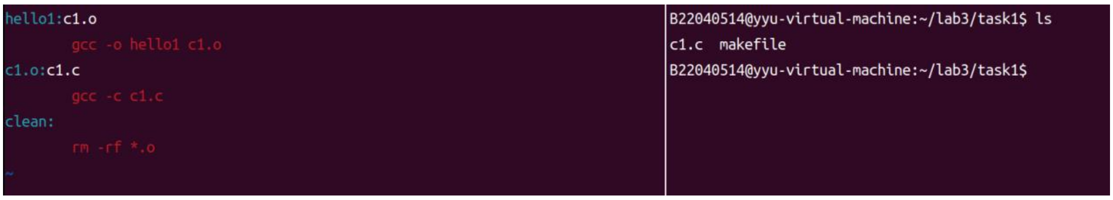
We can use the following makefile.

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



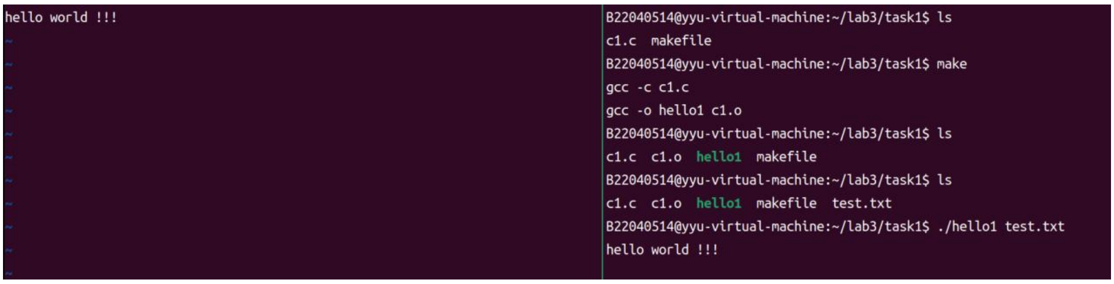
```
#include <stdio.h>
int main(int argc, char* argv[])
{
        char buf[1024] = { 0 };
        FILE* fp = fopen(argv[1],"r");
        if (argc < 2)
        {
                printf("please input source file!\n");
        }
        if (fp == NULL)
        {
                printf("open source %s failed\n",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

```
B22040514@yyu-virtual-machine:~/lab3/task1$ ls
c1.c  makefile
B22040514@yyu-virtual-machine:~/lab3/task1$
```



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

```
B22040514@yyu-virtual-machine:~/lab3/task1$ ls
c1.c  makefile
B22040514@yyu-virtual-machine:~/lab3/task1$
```



```
hello world !!!
~
~
~
~
~
~
~
~
~
~
~
```

```
B22040514@yyu-virtual-machine:~/lab3/task1$ ls
c1.c  makefile
B22040514@yyu-virtual-machine:~/lab3/task1$ make
gcc -c c1.c
gcc -o hello1 c1.o
B22040514@yyu-virtual-machine:~/lab3/task1$ ls
c1.c  c1.o  hello1  makefile
B22040514@yyu-virtual-machine:~/lab3/task1$ ls
c1.c  c1.o  hello1  makefile  test.txt
B22040514@yyu-virtual-machine:~/lab3/task1$ ./hello1 test.txt
hello world !!!
```

(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>

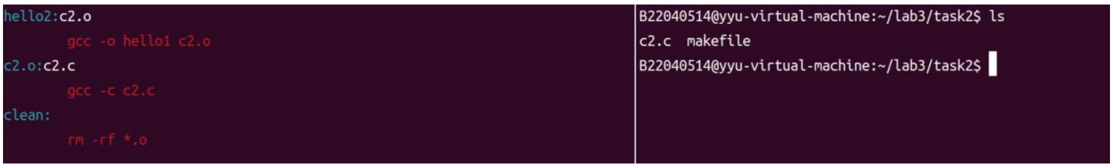
include <sys/types.h>

```
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

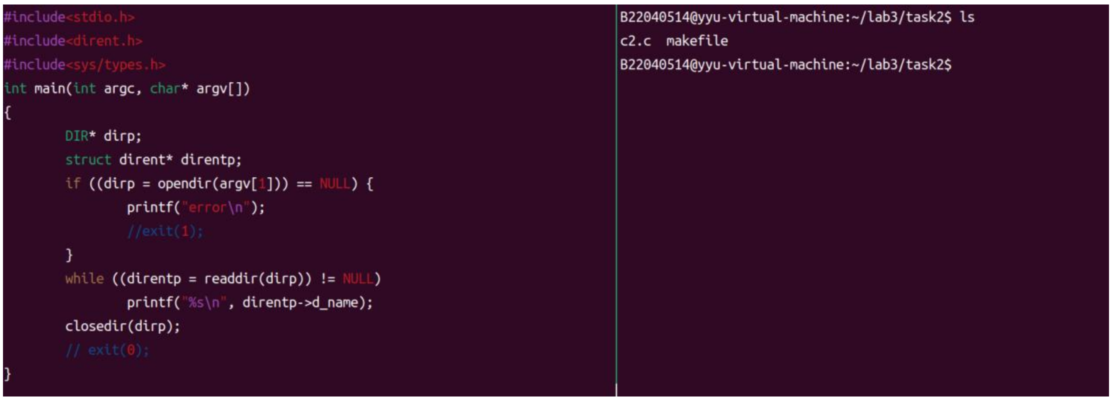
We can use the following makefile.

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



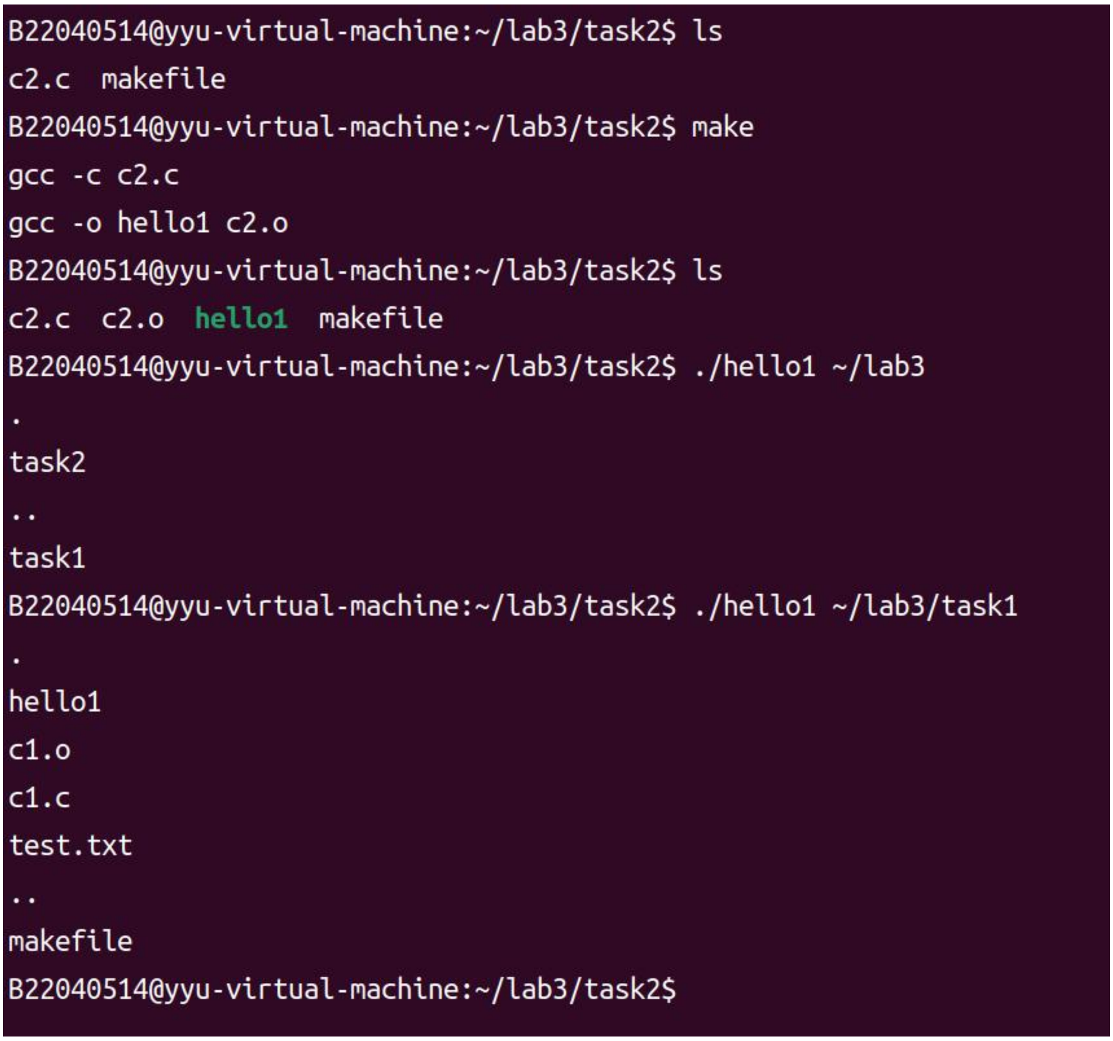
```
hello2:c2.o
	gcc -o hello1 c2.o
c2.o:c2.c
	gcc -c c2.c
clean:
	rm -rf *.o
```

```
B22040514@yyu-virtual-machine:~/lab3/task2$ ls
c2.c  makefile
B22040514@yyu-virtual-machine:~/lab3/task2$ 
```



```
#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);
}
```

```
B22040514@yyu-virtual-machine:~/lab3/task2$ ls
c2.c  makefile
B22040514@yyu-virtual-machine:~/lab3/task2$
```



```
B22040514@yyu-virtual-machine:~/lab3/task2$ ls
c2.c  makefile
B22040514@yyu-virtual-machine:~/lab3/task2$ make
gcc -c c2.c
gcc -o hello1 c2.o
B22040514@yyu-virtual-machine:~/lab3/task2$ ls
c2.c  c2.o  hello1  makefile
B22040514@yyu-virtual-machine:~/lab3/task2$ ./hello1 ~/lab3
.
task2
..
task1
B22040514@yyu-virtual-machine:~/lab3/task2$ ./hello1 ~/lab3/task1
.
hello1
c1.o
c1.c
test.txt
..
makefile
B22040514@yyu-virtual-machine:~/lab3/task2$
```

(3) Task 3

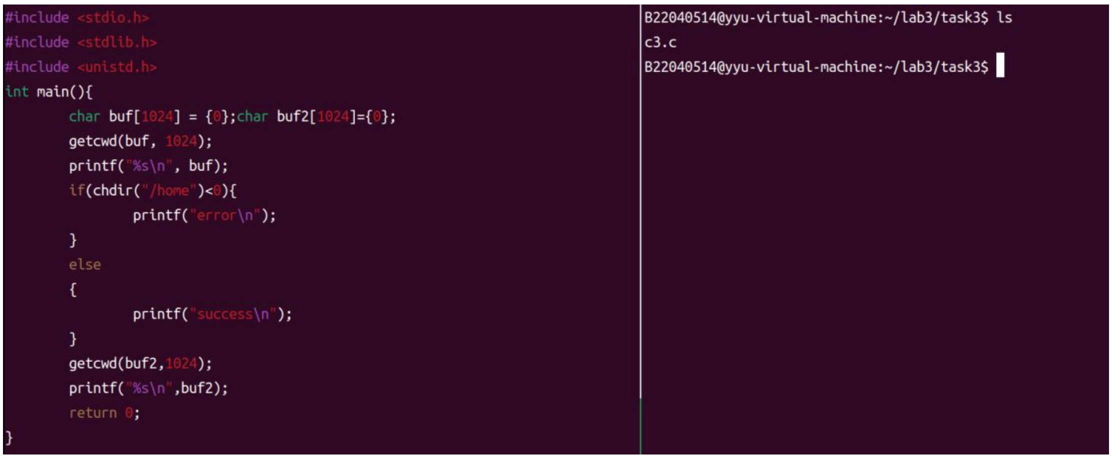
(3) Write a C program that changes the working directory of the current process. The program is compiled and linked by the make tool, which requires the generation of the.o file first, and then the generation of the executable file, and the function of deleting the intermediate file (.o) in the makefile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

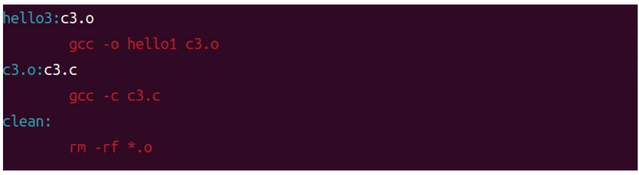
We can use the following makefile.

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

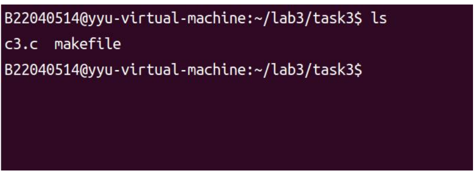


```
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
int main(){
        char buf[1024] = {0};char buf2[1024]={0};
        getcwd(buf, 1024);
        printf("%s\n", buf);
        if(chdir("/home")<0){
                printf("error\n");
        }
        else
        {
                printf("success\n");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

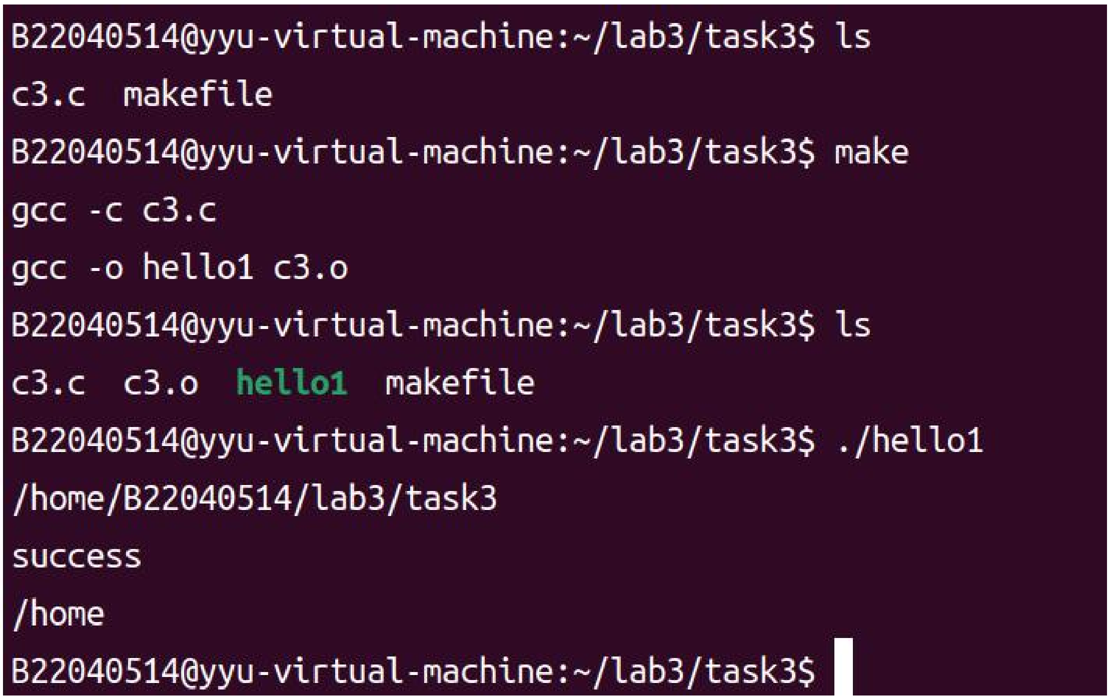
```
B22040514@yyu-virtual-machine:~/lab3/task3$ ls
c3.c
B22040514@yyu-virtual-machine:~/lab3/task3$
```



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



```
B22040514@yyu-virtual-machine:~/lab3/task3$ ls
c3.c  makefile
B22040514@yyu-virtual-machine:~/lab3/task3$
```



```
B22040514@yyu-virtual-machine:~/lab3/task3$ ls
c3.c  makefile
B22040514@yyu-virtual-machine:~/lab3/task3$ make
gcc -c c3.c
gcc -o hello1 c3.o
B22040514@yyu-virtual-machine:~/lab3/task3$ ls
c3.c  c3.o  hello1  makefile
B22040514@yyu-virtual-machine:~/lab3/task3$ ./hello1
/home/B22040514/lab3/task3
success
/home
B22040514@yyu-virtual-machine:~/lab3/task3$
```