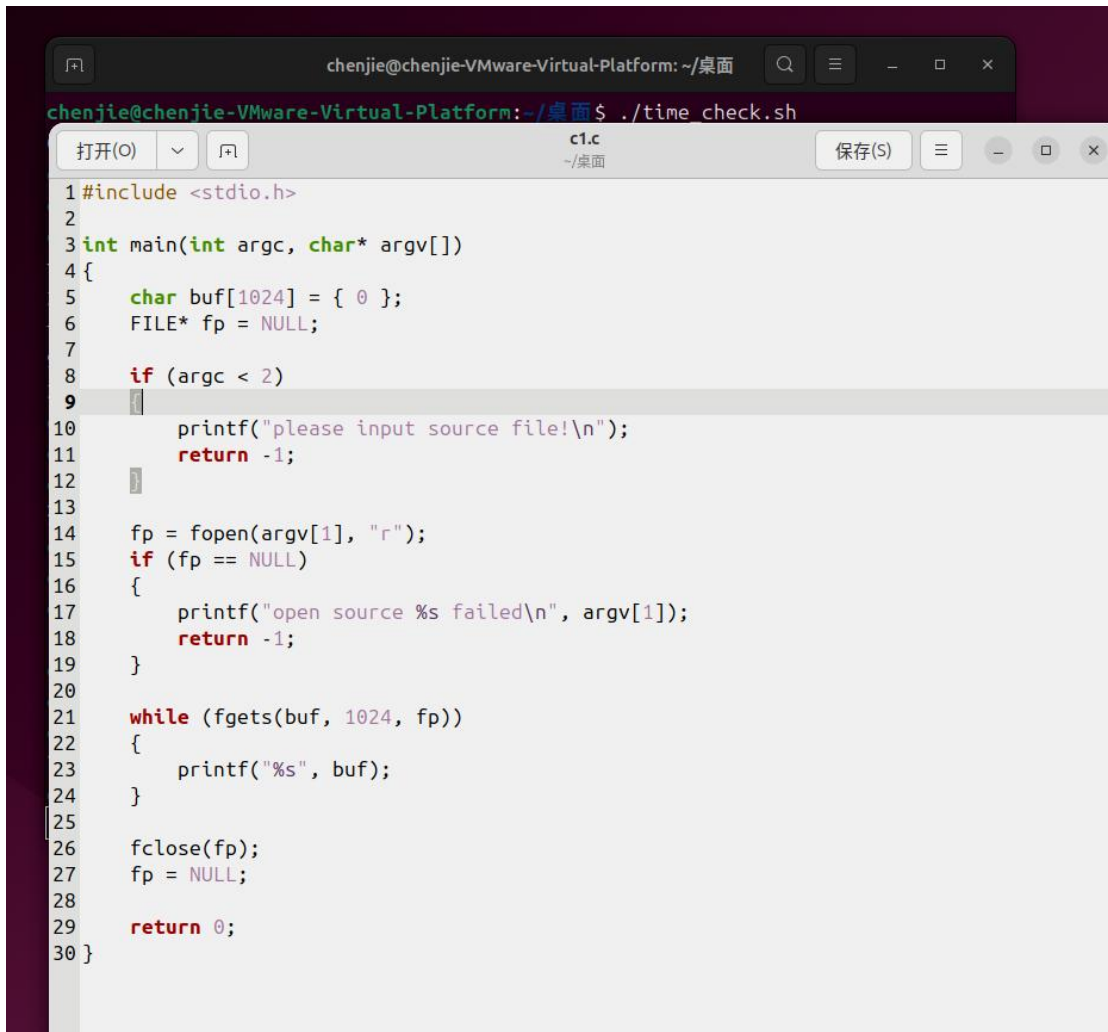


Experiment3

(1) Task 1

- 1.用 gedit 创建并保存 c1.c，输入代码。
- 2.用 gedit 创建 makefile，写入代码并保存。
- 3.执行 make 命令：make hello1，终端会显示：
gcc -c c1.c
gcc -o hello1 c1.o
- 4.创建测试文本文件 test.txt：echo "Hello C with gedit" > test.txt
echo "Task 1 test file" >> test.txt
- 5.执行可执行文件 hello1：./hello1 test.txt
终端会显示 test.txt 的内容：
Hello C with gedit
Task 1 test file
- 6.清理中间文件（删除 c1.o）：make clean



```
chenjie@chenjie-VMware-Virtual-Platform: ~/桌面
chenjie@chenjie-VMware-Virtual-Platform: ~/桌面$ ./time check.sh

1 #include <stdio.h>
2
3 int main(int argc, char* argv[])
4 {
5     char buf[1024] = { 0 };
6     FILE* fp = NULL;
7
8     if (argc < 2)
9     {
10        printf("please input source file!\n");
11        return -1;
12    }
13
14    fp = fopen(argv[1], "r");
15    if (fp == NULL)
16    {
17        printf("open source %s failed\n", argv[1]);
18        return -1;
19    }
20
21    while (fgets(buf, 1024, fp))
22    {
23        printf("%s", buf);
24    }
25
26    fclose(fp);
27    fp = NULL;
28
29    return 0;
30 }
```

```
chenjie@chenjie-VMware-Virtual-Platform: ~/桌面
```

```
1 hello1:c1.o
2      gcc -o hello1 c1.o
3 c1.o:c1.c
4      gcc -c c1.c
5 .PHONY: clean
6 clean:
7      rm -rf *.o
```

```
chenjie@chenjie-VMware-Virtual-Platform: ~/桌面
```

```
已下载 180 kB, 耗时 0秒 (396 kB/s)
正在选中未选择的软件包 make。
(正在读取数据库 ... 系统当前共安装有 194476 个文件和目录。)
准备解压 .../make_4.3-4.1build2_amd64.deb ...
正在解压 make (4.3-4.1build2) ...
正在设置 make (4.3-4.1build2) ...
正在处理用于 man-db (2.12.0-4build2) 的触发器 ...
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ make clean
makefile:2: *** 缺失分隔符。 停止。
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ gedit makefile
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ make hello1
make: "hello1"已是最新。
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ gcc -c c1.c -o c1.o
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ gcc c1.o -o hello1
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ echo "Hello C with gedit" > test.txt
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ echo "Task 1 test file" >> test.txt
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ ./hello1 test.txt
Hello C with gedit
Task 1 test file
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ make clean
rm -rf *.o
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$
```

(2) Task 2

1.用 gedit 创建 c2.c,写入代码并保存

2.用 gedit 修改 Makefile

3.用 make 编译: make hello2

成功后终端显示:

```
gcc -c c2.c
```

```
gcc -o hello2 c2.o
```

4.执行程序并查看结果: ./hello2

结果: 显示家目录下所有文件 / 目录

5.清理中间文件: 终端输入 make clean, 删除 c2.o: make clean

```
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ make clean

c2.c
~/桌面

1 #include <stdio.h>
2 #include <dirent.h>
3 #include <sys/types.h>
4 #include <stdlib.h>
5
6 int main(int argc, char* argv[])
7 {
8     DIR* dirp = NULL;
9     struct dirent* direntp = NULL;
10
11     if (argc < 2)
12     {
13         printf("Warning: No directory specified, use current directory.\n");
14         dirp = opendir(".");
15     }
16     else
17     {
18         dirp = opendir(argv[1]);
19     }
20
21     if (dirp == NULL)
22     {
23         printf("open directory %s failed\n", (argc >= 2) ? argv[1] : ".");
24         exit(1);
25     }
26
27     while ((direntp = readdir(dirp)) != NULL)
28     {
29         printf("%s\n", direntp->d_name);
30     }
31
32     closedir(dirp);
33     dirp = NULL;
34
35     exit(0);
36 }
```

```
正在处理用于 Makefile (2.12.0-4b01cd2) 的触发器 ...
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ make clean

makefile
~/桌面

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

```
chenjie@chenjie-VMware-Virtual-Platform: ~/桌面
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ gedit c2.c
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ gedit makefile
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ make hello2
gcc -c c2.c
gcc -o hello2 c2.o
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ gcc -c c2.c -o c2.o
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ gcc c2.o -o hello2
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ ./hello2
Warning: No directory specified, use current directory.
ex2_4
ex2_1
makefile
childProcess
.
number_compare.sh
c1.c
hello1
ex2_3.c
is_prime.sh
helloThread2.c
c2.o
ex2_2
time_check.sh
..
```

```
chenjie@chenjie-VMware-Virtual-Platform: ~/桌面
..
ex2_2.c
ex2_5
childProcess2.c
helloThread.c
count_exec.sh
find_min.sh
test.txt
ex2_4.c
helloThread2
c2.c
hello2
ex2_3
ex2_1.c
ex2_5.c
helloThread
childProcess2
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ ./hello2 /home
b23041321
.
chenjie
..
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ make clean
rm -rf *.o
```

(3) Task 3

1.用 gedit 创建 c3.c 写入代码并保存

2.用 gedit 修改 Makefile

3.用 make 编译

终端输入:

make hello3

成功输出:

gcc -c c3.c

gcc -o hello3 c3.o

4.执行程序

终端输入命令: ./hello3

5.结果:

Initial working directory: /home/chenjie/桌面

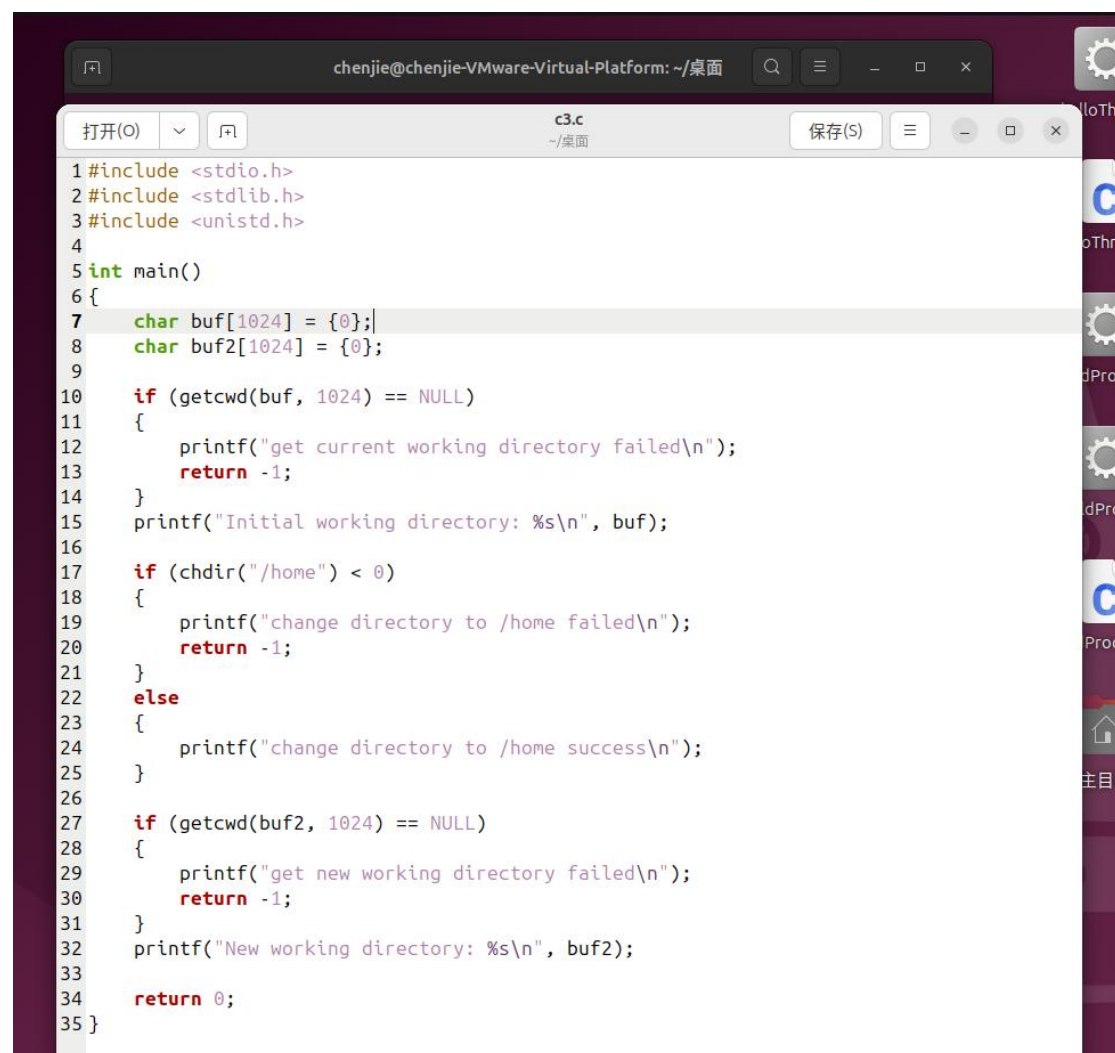
change directory to /home success

New working directory: /home

6.清理中间文件

终端输入 make clean, 删除 c3.o:

make clean

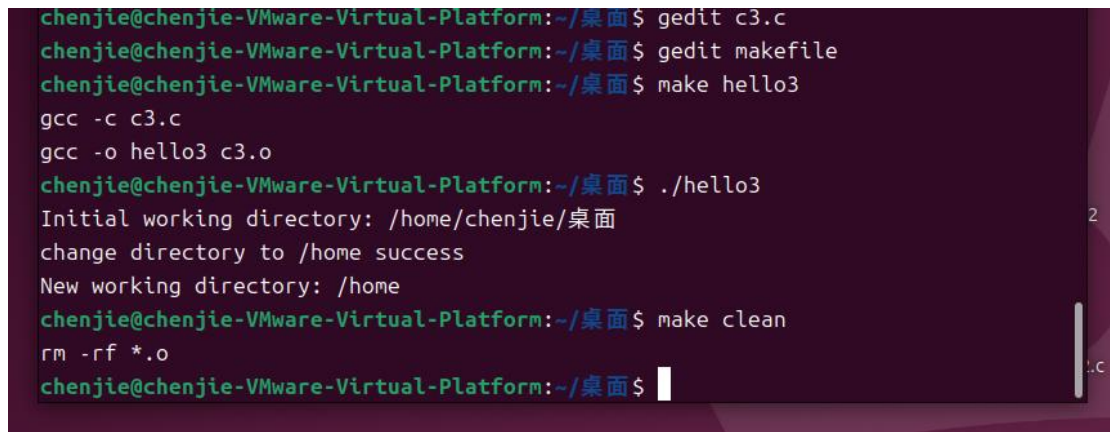


```
1 #include <stdio.h>
2 #include <stdlib.h>
3 #include <unistd.h>
4
5 int main()
6 {
7     char buf[1024] = {0};
8     char buf2[1024] = {0};
9
10    if (getcwd(buf, 1024) == NULL)
11    {
12        printf("get current working directory failed\n");
13        return -1;
14    }
15    printf("Initial working directory: %s\n", buf);
16
17    if (chdir("/home") < 0)
18    {
19        printf("change directory to /home failed\n");
20        return -1;
21    }
22    else
23    {
24        printf("change directory to /home success\n");
25    }
26
27    if (getcwd(buf2, 1024) == NULL)
28    {
29        printf("get new working directory failed\n");
30        return -1;
31    }
32    printf("New working directory: %s\n", buf2);
33
34    return 0;
35 }
```



A screenshot of a gedit window titled "makefile" with the path "~/桌面". The window contains a Makefile with the following content:

```
1 hello3:c3.o
2     gcc -o hello3 c3.o
3 c3.o:c3.c
4     gcc -c c3.c
5 .PHONY: clean
6 clean:
7     rm -rf *.o
```



A screenshot of a terminal window showing the execution of the Makefile. The user runs the following commands:

```
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ gedit c3.c
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ gedit makefile
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ make hello3
gcc -c c3.c
gcc -o hello3 c3.o
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ ./hello3
Initial working directory: /home/chenjie/桌面
change directory to /home success
New working directory: /home
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$ make clean
rm -rf *.o
chenjie@chenjie-VMware-Virtual-Platform:~/桌面$
```