

CSC415 HW2

Name: Cheng Li

SFSU ID: 916422876

Host OS: Windows 7

Guest OS: Linux (Ubuntu 14) on VirtualBox

1. Programming in Linux (in VirtualBox)

Requirement:

- Make a copy program and output the total bytes read

Code Segment:

```
1  /**HW2
2  * Copy.c
3  * By Cheng LI
4  *
5  */
6
7  #include <unistd.h>
8  #include <stdio.h>
9  #include <stdlib.h>
10 #include <fcntl.h>
11 #include <errno.h>
12 #include <sys/types.h>
13
14 #define BUF_SIZE 1024
15
16 int main(int argc, char const *argv[])
17 {
18     int input_fd, output_fd; // Input and output file descriptor
19     ssize_t bytes_in=0, bytes_out=0, bytes_read_all=0; // Num of bytes returned
20     char buffer[BUF_SIZE]; // Buffer
21
22     /*Check the proper usage*/
23
24     if (argc!=3)
25     {
26         printf("Usage: mycp file1 file2 \n");
27         return 1;
28     }
29
30     /*Open input file*/
31     input_fd = open(argv[1],O_RDONLY);
32     if (input_fd<0)
```

```

30  /*Open input file*/
31  input_fd = open(argv[1],O_RDONLY);
32  if (input_fd<0)
33  {
34      perror("Open the input file");
35      return 1;
36  }
37
38  /*Create the output file*/
39  output_fd = open(argv[2],O_CREAT|O_TRUNC|O_WRONLY, 0644);
40  if (output_fd < 0)
41  {
42      perror("Open the output file");
43      return 2;
44  }
45
46  /*Copy process*/
47  while((bytes_in=read(input_fd, buffer, BUF_SIZE)) > 0)
48  {
49      bytes_out = write(output_fd, buffer, (ssize_t)bytes_in);
50      if (bytes_in != bytes_out)
51      {
52          perror("Write error");
53          return 4;
54      }
55      bytes_read_all += bytes_out;
56  }
57
58  printf("File copy finished, %u bytes copied.\n", bytes_read_all);
59
60  close(input_fd);

```

Compile and run:

```

cheng@cheng-VirtualBox: ~/CSC415/HW2
total 7784
drwxrwxr-x 2 cheng cheng 4096 Feb 18 13:46 ./
drwxrwxr-x 4 cheng cheng 4096 Feb 18 13:42 ../
-rw-rw-r-- 1 cheng cheng 1157 Feb 18 13:43 copy.c
-rw-rw-r-- 1 cheng cheng 37 Feb 18 13:46 Test1
-rw-rw-r-- 1 cheng cheng 0 Feb 18 13:45 Test1~
-rw-rw-r-- 1 cheng cheng 7952096 Feb 18 13:44 Test2
cheng@cheng-VirtualBox:~/CSC415/HW2$ cc -Wall copy.c -o mycp
cheng@cheng-VirtualBox:~/CSC415/HW2$ ll
total 7792
drwxrwxr-x 2 cheng cheng 4096 Feb 18 13:46 ./
drwxrwxr-x 4 cheng cheng 4096 Feb 18 13:42 ../
-rw-rw-r-- 1 cheng cheng 1157 Feb 18 13:43 copy.c
-rwxrwxr-x 1 cheng cheng 7601 Feb 18 13:46 mycp*
-rw-rw-r-- 1 cheng cheng 37 Feb 18 13:46 Test1
-rw-rw-r-- 1 cheng cheng 0 Feb 18 13:45 Test1~
-rw-rw-r-- 1 cheng cheng 7952096 Feb 18 13:44 Test2
cheng@cheng-VirtualBox:~/CSC415/HW2$ ./mycp Test1 cputput
File copy finished, 37 bytes copied.
cheng@cheng-VirtualBox:~/CSC415/HW2$ diff Test1 cputput
cheng@cheng-VirtualBox:~/CSC415/HW2$ ll
total 7796
drwxrwxr-x 2 cheng cheng 4096 Feb 18 13:47 ./
drwxrwxr-x 4 cheng cheng 4096 Feb 18 13:42 ../
-rw-rw-r-- 1 cheng cheng 1157 Feb 18 13:43 copy.c
-rw-r--r-- 1 cheng cheng 37 Feb 18 13:47 cputput
-rwxrwxr-x 1 cheng cheng 7601 Feb 18 13:46 mycp*
-rw-rw-r-- 1 cheng cheng 37 Feb 18 13:46 Test1
-rw-rw-r-- 1 cheng cheng 0 Feb 18 13:45 Test1~
-rw-rw-r-- 1 cheng cheng 7952096 Feb 18 13:44 Test2
cheng@cheng-VirtualBox:~/CSC415/HW2$

```

Copy ASCII file

```
cheng@cheng-VirtualBox: ~/CSC415/HW2
cheng@cheng-VirtualBox:~/CSC415/HW2$ more Test1
abcdefg
1234567
+~/
hello world 415
cheng@cheng-VirtualBox:~/CSC415/HW2$ ./mycp Test1 Test1_copy
File copy finished, 37 bytes copied.
cheng@cheng-VirtualBox:~/CSC415/HW2$ ll
total 7800
drwxrwxr-x 2 cheng cheng 4096 Feb 18 13:54 ./
drwxrwxr-x 4 cheng cheng 4096 Feb 18 13:42 ../
-rw-rw-r-- 1 cheng cheng 1157 Feb 18 13:43 copy.c
-rw-r--r-- 1 cheng cheng 37 Feb 18 13:47 cpoutput
-rwxrwxr-x 1 cheng cheng 7601 Feb 18 13:46 mycp*
-rw-rw-r-- 1 cheng cheng 37 Feb 18 13:46 Test1
-rw-rw-r-- 1 cheng cheng 0 Feb 18 13:45 Test1~
-rw-r--r-- 1 cheng cheng 37 Feb 18 13:54 Test1_copy
-rw-rw-r-- 1 cheng cheng 7952096 Feb 18 13:44 Test2
cheng@cheng-VirtualBox:~/CSC415/HW2$ more Test1_copy
abcdefg
1234567
+~/
hello world 415
cheng@cheng-VirtualBox:~/CSC415/HW2$
```

Copy a binary file (The Test2 in the folder)

```
cheng@cheng-VirtualBox: ~/CSC415/HW2
cheng@cheng-VirtualBox:~/CSC415/HW2$ ./mycp Test2 Test2_copy
File copy finished, 7952096 bytes copied.
cheng@cheng-VirtualBox:~/CSC415/HW2$ ll
total 15568
drwxrwxr-x 2 cheng cheng 4096 Feb 18 13:57 ./
drwxrwxr-x 4 cheng cheng 4096 Feb 18 13:42 ../
-rw-rw-r-- 1 cheng cheng 1157 Feb 18 13:43 copy.c
-rw-r--r-- 1 cheng cheng 37 Feb 18 13:47 cpoutput
-rwxrwxr-x 1 cheng cheng 7601 Feb 18 13:46 mycp*
-rw-rw-r-- 1 cheng cheng 37 Feb 18 13:46 Test1
-rw-rw-r-- 1 cheng cheng 0 Feb 18 13:45 Test1~
-rw-r--r-- 1 cheng cheng 37 Feb 18 13:54 Test1_copy
-rw-rw-r-- 1 cheng cheng 7952096 Feb 18 13:44 Test2
-rw-r--r-- 1 cheng cheng 7952096 Feb 18 13:57 Test2_copy
cheng@cheng-VirtualBox:~/CSC415/HW2$ diff Test2 Test2_copy
cheng@cheng-VirtualBox:~/CSC415/HW2$
```