HW4 Programming Problems

Q11.13

根據指令執行，了解 hard link、soft link。

How to run

`main.sh` contains all scripts to run

you should prepare file1.txt and file3.txt before running those scripts in the same directory.

execution snapshot

(1) What are the inode values of file1.txt and file2.txt?

file1: 19661599, file2: 19661599

Are they the same or different?

the same

Do the two files have the same or different contents?

Yes, they are the same

(2) Are the contents of file1.txt and file2.txt the same or different?

They are the same

remove file1.txt. Does file2.txt still exist as well?

file2 still exist

```
geteuid()                                              = 1000
newfstatat(AT_FDCWD, "file2.txt", {st_mode=S_IFREG|0664, st_size=6, ...}, AT_SYMLINK_NOFOLLOW) = 0
faccessat(AT_FDCWD, "file2.txt", W_OK)   = 0
unlinkat(AT_FDCWD, "file2.txt", 0)       = 0
lseek(0, 0, SEEK_CUR)                    = -1 ESPIPE (Illegal seek)
close(0)                                 = 0
close(1)                                 = 0
close(2)                                 = 0
exit_group(0)                            = ?
+++ exited with 0 +++
```

(3) Are the inode numbers of file3.txt and file4.txt the same, or is each unique?

they are different

```
ubuntu@ubuntu2004:~/Desktop/hw4$ cat file3.txt
file3
ubuntu@ubuntu2004:~/Desktop/hw4$ ls -li file3.txt
19661562 -rw-rw-r-- 1 ubuntu ubuntu 6 Jun  2 10:23 file3.txt
ubuntu@ubuntu2004:~/Desktop/hw4$ ln -s file3.txt file4.txt
ubuntu@ubuntu2004:~/Desktop/hw4$ cat file4.txt
file3
ubuntu@ubuntu2004:~/Desktop/hw4$ ls -li file4.txt
19661552 lrwxrwxrwx 1 ubuntu ubuntu 9 Jun  2 10:27 file4.txt -> file3.txt
ubuntu@ubuntu2004:~/Desktop/hw4$
```

Next, edit the contents of file4.txt. Have the contents of file3.txt been altered as well?
Yes

Last, delete file3.txt. Explain what happens when you attempt to edit file4.txt.
Once I delete the file3.txt, file4.txt still exists but I can't use the *cat* command to print out the file content. It is an empty file now. After editing the file4.txt, the system automatically creates file3.txt and the contents of which are the same as the file4.txt.

```
ubuntu@ubuntu2004:~/Desktop/hw4$ cat file3.txt
file3
ubuntu@ubuntu2004:~/Desktop/hw4$ ls -li file3.txt
19661562 -rw-rw-r-- 1 ubuntu ubuntu 6 Jun  2 10:23 file3.txt
ubuntu@ubuntu2004:~/Desktop/hw4$ ln -s file3.txt file4.txt
ubuntu@ubuntu2004:~/Desktop/hw4$ cat file4.txt
file3
ubuntu@ubuntu2004:~/Desktop/hw4$ ls -li file4.txt
19661552 lrwxrwxrwx 1 ubuntu ubuntu 9 Jun  2 10:27 file4.txt -> file3.txt
ubuntu@ubuntu2004:~/Desktop/hw4$ rm file3.txt
ubuntu@ubuntu2004:~/Desktop/hw4$ cat file4.txt
cat: file4.txt: No such file or directory
ubuntu@ubuntu2004:~/Desktop/hw4$ ls
file4.txt  main.sh
ubuntu@ubuntu2004:~/Desktop/hw4$ cat file4.txt
cat: file4.txt: No such file or directory
ubuntu@ubuntu2004:~/Desktop/hw4$ cat file4.txt
file4
ubuntu@ubuntu2004:~/Desktop/hw4$ ls
file3.txt  file4.txt  main.sh
ubuntu@ubuntu2004:~/Desktop/hw4$
```

Q8.25

實作 FCFS、SSTF、SCAN、C-SCAN 演算法
How to run

enter `python3 main.py` to execute

execution snapshot

```
lohsuan@MSI:/mnt/d/college/3junior/OS_HW/108820001_HW4/12_26$ python3 main.py
Enter the maximum of the disk storage: 5000
Enter the current cylinder: 2150
Enter the queue of pending requests in FIFO order: 2069 1212 2296 2800 544 1618 356 1523 4965 3681
(FCFS)The total distance: 13011
(SSTF)The total distance: 7586
(SCAN-left)The total distance: 7115
(SCAN-right)The total distance: 7492
(CSCAN-right)The total distance: 9917
lohsuan@MSI:/mnt/d/college/3junior/OS_HW/108820001_HW4/12_26$
```