

許家文 408530049

1.

4個terminal 執行flock的結果

```
ulohg@ulohg-VirtualBox:~$ cd system-programming/ch04/  
ulohg@ulohg-VirtualBox:~/system-programming/ch04$ time ./a.out  
  
real    1m40.996s  
user    0m0.008s  
sys     0m0.092s
```

```
ulohg@ulohg-VirtualBox:~/system-programming/ch04$ time ./a.out  
  
real    1m40.925s  
user    0m0.023s  
s Help  0m0.077s  
ulohg@ulohg-VirtualBox:~/system-programming/ch04$
```

```
ulohg@ulohg-VirtualBox:~/system-programming/ch04$ time ./a.out  
  
real    1m40.770s  
user    0m0.058s  
sys     0m0.039s
```

```
ulohg@ulohg-VirtualBox:~/system-programming/ch04$ time ./a.out  
  
real    1m40.950s  
user    0m0.007s  
sys     0m0.089s
```

4個terminal 執行lockf的結果

```
ulohg@ulohg-VirtualBox:~/system-program/hw04$ time ./lockf  
  
real    1m45.720s  
user    0m0.030s  
sys     0m0.701s
```

```
ulohg@ulohg-VirtualBox:~/system-program/hw04$ time ./lockf  
  
real    3m14.162s  
user    0m0.016s  
sys     0m0.641s
```

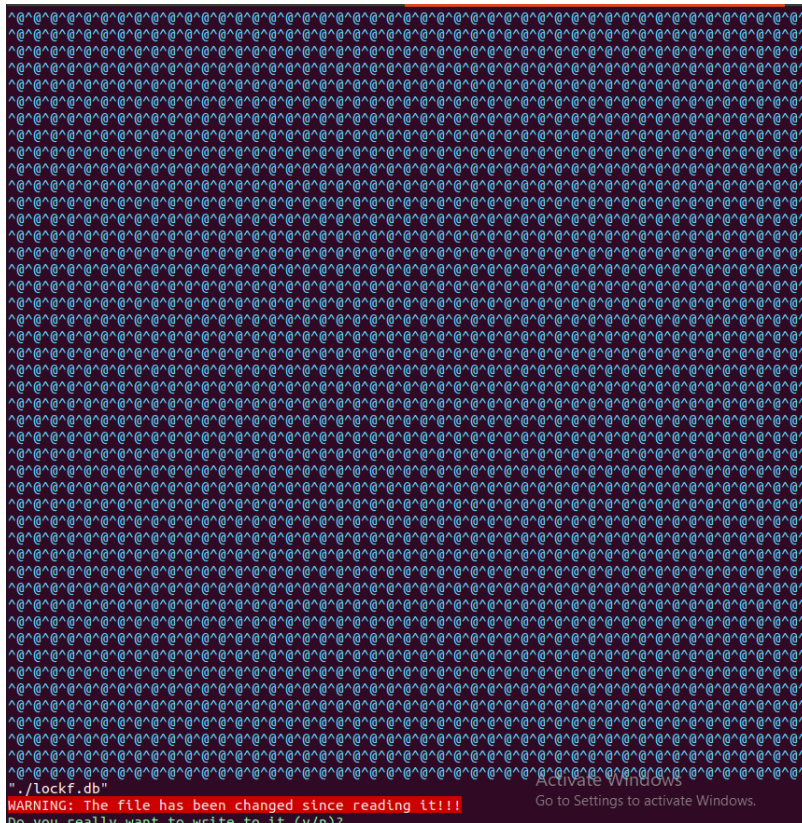
```
ulohg@ulohg-VirtualBox:~/system-program/hw04$ time ./lockf  
  
real    5m10.143s  
user    0m0.032s  
sys     0m0.684s
```

```
ulohg@ulohg-VirtualBox:~/system-program/hw04$ time ./lockf  
  
real    6m43.673s  
user    0m0.045s  
sys     0m0.728s
```

用vim 寫入flock 會跑出警告但還是可以寫入

成功寫入flock.db

用vim 寫入lockf 會跑出警告但還是可以寫入



```
ulohg@ulohg-VirtualBox:~/system-program/hw04$ cat lockf.db
3500 lockf
350135023503350435053506350735083509351035113512351335143515351635173518351935203521352235233524
352535263527352835293530353135323533353435353536353735383539354035413542354335443545354635473548
354935503551355235533554355535563557355835593560356135623563356435653566356735683569357035713572
3573357435753576357735783579
```

成功寫入lockf.db

3.

執行1次flock後 的檔案大小為邏輯16MB,實體21MB

```
ulohg@ulohg-VirtualBox:~/Desktop/system-program/hw03$ ls -alhss ./flock.db
3.8M -rw-rw-r-- 1 ulohg ulohg 3.9M 3月 17 14:18 ./flock.db
```

執行4次flock後 的檔案大小為邏輯16MB,實體21MB

```
top/system-program/hw03$ ls -alhss ./flock.db
16M -rw-rw-r-- 1 ulohg ulohg 21M 3月 17 14:08 ./flock.db
```

執行1次flock後 的檔案大小為邏輯16MB,實體21MB

```
ulohg@ulohg-VirtualBox:~/Desktop/system-program/hw03$ ls -alhss ./lockf.db
3.8M -rw-rw-r-- 1 ulohg ulohg 3.9M 3月 17 14:19 ./lockf.db
```

執行4次flock後 的檔案大小為邏輯16MB,實體21MB

```
ulohg@ulohg-VirtualBox:~/Desktop/system-program/hw03$ ls -alhss ./lockf.db
16M -rw-rw-r-- 1 ulohg ulohg 21M 3月 18 11:04 ./lockf.db
```

依照程式碼的邏輯來說一個char 占用一個byte 數字從3500-7500總共4000個字，其中每個字占用1個byte總共應該為4K。但因為文件系統通常是以block為單位來分配disk space，block的大小通常是4K或8K，若寫入的byte不是block的整數倍數，os會分配更多的空間來儲存這份文件讓它是block的倍數容量。