系統程式設計 System Programming 2021
Hw04　buffer 與效能

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<前置作業>

這次作業寫得不好，之後會找出問題

<Code>

測試一

因為我的 code 會報錯，我設定 buffer size 測試大致會有時間減小的趨勢，但感覺測得不準，因為還找不出 bug QQ

```
nash@SleepyCat: ~/Desktop/system-programming/ch05_copy          nash@SleepyCat: ~/Desktop/system-programming/ch05_copy
nash@SleepyCat:~/Desktop/system-programming/ch05_copy$ time ./fileperf input.txt myoutput.txt -1 > out.log
*** stack smashing detected ***: terminated
Aborted (core dumped)

real    0m1.356s
user    0m0.550s
sys     0m0.561s
nash@SleepyCat:~/Desktop/system-programming/ch05_copy$ time ./fileperf input.txt myoutput.txt 1000 > out.log
*** stack smashing detected ***: terminated
Aborted (core dumped)

real    0m1.001s
user    0m0.455s
sys     0m0.289s
nash@SleepyCat:~/Desktop/system-programming/ch05_copy$ time ./fileperf input.txt myoutput.txt 4000 > out.log
*** stack smashing detected ***: terminated
Aborted (core dumped)

real    0m0.925s
user    0m0.449s
sys     0m0.273s
nash@SleepyCat:~/Desktop/system-programming/ch05_copy$ time ./fileperf input.txt myoutput.txt 40000 > out.log
*** stack smashing detected ***: terminated
Aborted (core dumped)

real    0m0.861s
user    0m0.407s
sys     0m0.238s
```

測試二

ltrace —— A library call tracer 跟踪進程調用庫函數(C library)的情況

因為程式有點問題，做不太出來

測試三

strace —— Trace system calls and signals。 跟踪進程的 system call 或信號產生的情況

非常多個 write 的系統呼叫，也占用了很多時間

```
write(1, "line_position:8 buffer_cursor:4l"..., 62) = 62
write(1, "linePos + bufferCursor: 5\n", 26) = 26
write(1, "line_position:5 bufferCursor:13\n", 32) = 32
write(1, "linePos + bufferCursor: 19\n", 27) = 27
write(1, "line_position:19 bufferCursor:7\n", 32) = 32
write(1, "linePos + bufferCursor: 27\n", 27) = 27
write(1, "line_position:27 bufferCursor:10"..., 33) = 33
write(1, "linePos + bufferCursor: 38\n", 27) = 27
--- SIGINT {si_signo=SIGINT, si_code=SI_KERNEL} ---
+++ killed by SIGINT +++
nash@SleepyCat:~/Desktop/system-programming/ch05_copy$
```

```
    1 execve("./fileperf", ["./fileperf", "input.txt", "myoutput.txt", "-1", "-T", "tt"], 0x7ffca0f8dee8 /*
      58 vars */) = 0
    2 brk(NULL)                               = 0x55d5628c5000
    3 arch_prctl(0x3001 /* ARCH_??? */, 0x7ffd7f258030) = -1 EINVAL (Invalid argument)
    4 access("/etc/ld.so.preload", R_OK)      = -1 ENOENT (No such file or directory)
    5 openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC) = 3
    6 fstat(3, {st_mode=S_IFREG|0644, st_size=65989, ...}) = 0
    7 mmap(NULL, 65989, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7f681b76c000
    8 close(3)                                = 0
    9 openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libc.so.6", O_RDONLY|O_CLOEXEC) = 3
   10 read(3, "\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0\360q\2\0\0\0\0\0"..., 832) = 832
   11 pread64(3, "\6\0\0\0\4\0\0\0@\0\0\0\0\0\0\0@\0\0\0\0\0\0\0@\0\0\0\0\0\0\0"..., 784, 64) = 784
```

```
write(1, "line_position:8 buffer_cursor:4l"..., 62) = 62
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--- SIGINT {si_signo=SIGINT, si_code=SI_KERNEL} ---
+++ killed by SIGINT +++
nash@SleepyCat:~/Desktop/system-programming/ch05_copy$
```

參考資料

Linux 下的调试工具 strace 与 ltrace

https://blog.csdn.net/uisoul/article/details/83143290

致謝