Московский Авиационный Институт

(Национальный Исследовательский Университет)

Институт №8 “Компьютерные науки и прикладная математика”

Кафедра №806 “Вычислительная математика и программирование”

**Лабораторная работа №8 по курсу**

**«Операционные системы»**

Группа: М8О-203Б-23

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Оценка: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Постановка задачи**

При выполнении лабораторных работ по курсу ОС необходимо продемонстрировать ключевые системные вызовы, которые в них используются и то, что их использование соответствует варианту ЛР

**Что такое strace?**

**Протокол выполнения**

9467 execve("./parent", ["./parent"], 0x7ffdad017788 /\* 26 vars \*/) = 0

9467 brk(NULL) = 0x5579fbc26000

9467 mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f1eda8fc000

9467 access("/etc/ld.so.preload", R\_OK) = -1 ENOENT (No such file or directory)

9467 openat(AT\_FDCWD, "/etc/ld.so.cache", O\_RDONLY|O\_CLOEXEC) = 3

9467 newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=21051, ...}, AT\_EMPTY\_PATH) = 0

9467 mmap(NULL, 21051, PROT\_READ, MAP\_PRIVATE, 3, 0) = 0x7f1eda8f6000

9467 openat(AT\_FDCWD, "/lib/x86\_64-linux-gnu/libc.so.6", O\_RDONLY|O\_CLOEXEC) = 3

9467 newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=2220400, ...}, AT\_EMPTY\_PATH) = 0

9467 mmap(NULL, 2264656, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f1eda6cd000

9467 mprotect(0x7f1eda6f5000, 2023424, PROT\_NONE) = 0

9467 mmap(0x7f1eda6f5000, 1658880, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x28000) = 0x7f1eda6f5000

9467 mmap(0x7f1eda88a000, 360448, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1bd000) = 0x7f1eda88a000

9467 mmap(0x7f1eda8e3000, 24576, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x215000) = 0x7f1eda8e3000

9467 mmap(0x7f1eda8e9000, 52816, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7f1eda8e9000

9467 mmap(NULL, 12288, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f1eda6ca000

9467 mprotect(0x7f1eda8e3000, 16384, PROT\_READ) = 0

9467 mprotect(0x5579e0370000, 4096, PROT\_READ) = 0

9467 mprotect(0x7f1eda936000, 8192, PROT\_READ) = 0

9467 munmap(0x7f1eda8f6000, 21051) = 0

9467 openat(AT\_FDCWD, "/dev/shm/shared\_memory", O\_RDWR|O\_CREAT|O\_NOFOLLOW|O\_CLOEXEC, 0666) = 3

9467 mmap(NULL, 1024, PROT\_READ|PROT\_WRITE, MAP\_SHARED, 3, 0) = 0x7f1eda935000

9467 clone(child\_stack=NULL, flags=CLONE\_CHILD\_CLEARTID|CLONE\_CHILD\_SETTID|SIGCHLD, child\_tidptr=0x7f1eda6caa10) = 9468

9467 clone(child\_stack=NULL, flags=CLONE\_CHILD\_CLEARTID|CLONE\_CHILD\_SETTID|SIGCHLD <unfinished ...>

9468 execve("./child1", ["./child1"], 0x7fff7aae0728 /\* 26 vars \*/ <unfinished ...>

9467 <... clone resumed>, child\_tidptr=0x7f1eda6caa10) = 9469

9467 newfstatat(1, "", {st\_mode=S\_IFCHR|0600, st\_rdev=makedev(0x88, 0x6), ...}, AT\_EMPTY\_PATH) = 0

9469 execve("./child2", ["./child2"], 0x7fff7aae0728 /\* 26 vars \*/ <unfinished ...>

9468 <... execve resumed>) = 0

9467 brk(NULL <unfinished ...>

9469 <... execve resumed>) = 0

9468 brk(NULL <unfinished ...>

9467 <... brk resumed>) = 0x5579fbc26000

9469 brk(NULL <unfinished ...>

9467 brk(0x5579fbc47000 <unfinished ...>

9468 <... brk resumed>) = 0x55879160c000

9467 <... brk resumed>) = 0x5579fbc47000

9469 <... brk resumed>) = 0x5653089a7000

9467 newfstatat(0, "", {st\_mode=S\_IFCHR|0600, st\_rdev=makedev(0x88, 0x6), ...}, AT\_EMPTY\_PATH) = 0

9468 mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f416856d000

9469 mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0 <unfinished ...>

9468 access("/etc/ld.so.preload", R\_OK <unfinished ...>

9469 <... mmap resumed>) = 0x7f7925713000

9468 <... access resumed>) = -1 ENOENT (No such file or directory)

9469 access("/etc/ld.so.preload", R\_OK <unfinished ...>

9468 openat(AT\_FDCWD, "/etc/ld.so.cache", O\_RDONLY|O\_CLOEXEC <unfinished ...>

9469 <... access resumed>) = -1 ENOENT (No such file or directory)

9468 <... openat resumed>) = 3

9469 openat(AT\_FDCWD, "/etc/ld.so.cache", O\_RDONLY|O\_CLOEXEC <unfinished ...>

9468 newfstatat(3, "", <unfinished ...>

9469 <... openat resumed>) = 3

9468 <... newfstatat resumed>{st\_mode=S\_IFREG|0644, st\_size=21051, ...}, AT\_EMPTY\_PATH) = 0

9469 newfstatat(3, "", <unfinished ...>

9468 mmap(NULL, 21051, PROT\_READ, MAP\_PRIVATE, 3, 0 <unfinished ...>

9469 <... newfstatat resumed>{st\_mode=S\_IFREG|0644, st\_size=21051, ...}, AT\_EMPTY\_PATH) = 0

9468 <... mmap resumed>) = 0x7f4168567000

9469 mmap(NULL, 21051, PROT\_READ, MAP\_PRIVATE, 3, 0) = 0x7f792570d000

9468 openat(AT\_FDCWD, "/lib/x86\_64-linux-gnu/libc.so.6", O\_RDONLY|O\_CLOEXEC) = 3

9469 openat(AT\_FDCWD, "/lib/x86\_64-linux-gnu/libc.so.6", O\_RDONLY|O\_CLOEXEC) = 3

9469 newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=2220400, ...}, AT\_EMPTY\_PATH) = 0

9468 newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=2220400, ...}, AT\_EMPTY\_PATH) = 0

9469 mmap(NULL, 2264656, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f79254e4000

9469 mprotect(0x7f792550c000, 2023424, PROT\_NONE <unfinished ...>

9468 mmap(NULL, 2264656, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0 <unfinished ...>

9469 <... mprotect resumed>) = 0

9469 mmap(0x7f792550c000, 1658880, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x28000 <unfinished ...>

9468 <... mmap resumed>) = 0x7f416833e000

9469 <... mmap resumed>) = 0x7f792550c000

9469 mmap(0x7f79256a1000, 360448, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1bd000 <unfinished ...>

9468 mprotect(0x7f4168366000, 2023424, PROT\_NONE <unfinished ...>

9469 <... mmap resumed>) = 0x7f79256a1000

9468 <... mprotect resumed>) = 0

9469 mmap(0x7f79256fa000, 24576, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x215000 <unfinished ...>

9468 mmap(0x7f4168366000, 1658880, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x28000 <unfinished ...>

9469 <... mmap resumed>) = 0x7f79256fa000

9468 <... mmap resumed>) = 0x7f4168366000

9469 mmap(0x7f7925700000, 52816, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0 <unfinished ...>

9468 mmap(0x7f41684fb000, 360448, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1bd000 <unfinished ...>

9469 <... mmap resumed>) = 0x7f7925700000

9468 <... mmap resumed>) = 0x7f41684fb000

9468 mmap(0x7f4168554000, 24576, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x215000) = 0x7f4168554000

9469 mmap(NULL, 12288, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0 <unfinished ...>

9468 mmap(0x7f416855a000, 52816, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0 <unfinished ...>

9469 <... mmap resumed>) = 0x7f79254e1000

9468 <... mmap resumed>) = 0x7f416855a000

9468 mmap(NULL, 12288, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f416833b000

9469 mprotect(0x7f79256fa000, 16384, PROT\_READ) = 0

9469 mprotect(0x5652f7faa000, 4096, PROT\_READ) = 0

9469 mprotect(0x7f792574d000, 8192, PROT\_READ) = 0

9469 munmap(0x7f792570d000, 21051) = 0

9468 mprotect(0x7f4168554000, 16384, PROT\_READ) = 0

9468 mprotect(0x55877a9eb000, 4096, PROT\_READ) = 0

9469 openat(AT\_FDCWD, "/dev/shm/shared\_memory", O\_RDWR|O\_NOFOLLOW|O\_CLOEXEC <unfinished ...>

9468 mprotect(0x7f41685a7000, 8192, PROT\_READ <unfinished ...>

9469 <... openat resumed>) = 3

9468 <... mprotect resumed>) = 0

9469 mmap(NULL, 1024, PROT\_READ|PROT\_WRITE, MAP\_SHARED, 3, 0) = 0x7f792574c000

9468 munmap(0x7f4168567000, 21051) = 0

9468 openat(AT\_FDCWD, "/dev/shm/shared\_memory", O\_RDWR|O\_NOFOLLOW|O\_CLOEXEC) = 3

9468 mmap(NULL, 1024, PROT\_READ|PROT\_WRITE, MAP\_SHARED, 3, 0) = 0x7f41685a6000

9467 kill(9468, SIGUSR1) = 0

9468 --- SIGUSR1 {si\_signo=SIGUSR1, si\_code=SI\_USER, si\_pid=9467, si\_uid=0} ---

9468 kill(9467, SIGUSR1) = 0

9467 --- SIGUSR1 {si\_signo=SIGUSR1, si\_code=SI\_USER, si\_pid=9468, si\_uid=0} ---

9467 kill(9469, SIGUSR2) = 0

9469 --- SIGUSR2 {si\_signo=SIGUSR2, si\_code=SI\_USER, si\_pid=9467, si\_uid=0} ---

9469 kill(9467, SIGUSR2) = 0

9467 --- SIGUSR2 {si\_signo=SIGUSR2, si\_code=SI\_USER, si\_pid=9469, si\_uid=0} ---

9467 kill(9468, SIGINT) = 0

9467 kill(9469, SIGINT <unfinished ...>

9468 --- SIGINT {si\_signo=SIGINT, si\_code=SI\_USER, si\_pid=9467, si\_uid=0} ---

9467 <... kill resumed>) = 0

9467 wait4(9468, <unfinished ...>

9469 --- SIGINT {si\_signo=SIGINT, si\_code=SI\_USER, si\_pid=9467, si\_uid=0} ---

9468 munmap(0x7f41685a6000, 1024) = 0

9469 munmap(0x7f792574c000, 1024) = 0

9468 exit\_group(0) = ?

9469 exit\_group(0) = ?

9468 +++ exited with 0 +++

9467 <... wait4 resumed>NULL, 0, NULL) = 9468

9469 +++ exited with 0 +++

9467 --- SIGCHLD {si\_signo=SIGCHLD, si\_code=CLD\_EXITED, si\_pid=9468, si\_uid=0, si\_status=0, si\_utime=0, si\_stime=0} ---

9467 wait4(9469, NULL, 0, NULL) = 9469

9467 munmap(0x7f1eda935000, 1024) = 0

9467 unlink("/dev/shm/shared\_memory") = 0

9467 exit\_group(0) = ?

9467 +++ exited with 0 +++

**Заключение**

Выполнив работу я получила навыки использование strace.