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: М80-206Б-20

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**Постановка задачи**

Приобретение практических навыков диагностики работы программного обеспечения. При выполнении лабораторных работ по курсу ОС необходимо продемонстрировать ключевые системные вызовы, которые в них используются и то, что их использование соответствует варианту ЛР. По итогам выполнения всех лабораторных работ отчет по данной ЛР должен содержать краткую сводку по исследованию написанных программ.

**Общий метод и алгоритм решения**

Команда**strace** показывает все системные вызовы программы, которые та отправляет к системе во время выполнения, а также их параметры и результат выполнения. Но при необходимости можно подключиться и к уже запущенному процессу. Перед тем, как перейти к практике, разберем опции утилиты и ее синтаксис:

**$ strace опции команда аргументы**

В самом простом варианте **strace** запускает переданную команду с её аргументами и выводит в стандартный поток ошибок все системные вызовы команды. Давайте разберём опции утилиты, с помощью которых можно управлять её поведением:

* **-i** - выводить указатель на инструкцию во время выполнения системного вызова;
* **-k** - выводить стек вызовов для отслеживаемого процесса после каждого системного вызова;
* **-o** - выводить всю информацию о системных вызовах не в стандартный поток ошибок, а в файл;
* **-q** - не выводить сообщения о подключении о отключении от процесса;
* **-qq** - не выводить сообщения о завершении работы процесса;
* **-r** - выводить временную метку для каждого системного вызова;
* **-s** - указать максимальный размер выводимой строки, по умолчанию 32;
* **-t** - выводить время суток для каждого вызова;
* **-tt** - добавить микросекунды;
* **-ttt** - добавить микросекунды и количество секунд после начала эпохи Unix;
* **-T** - выводить длительность выполнения системного вызова;
* **-x** - выводить все не ASCI-строки в шестнадцатеричном виде;
* **-xx** - выводить все строки в шестнадцатеричном виде;
* **-y** - выводить пути для файловых дескрипторов;
* **-yy** - выводить информацию о протоколе для файловых дескрипторов;
* **-c** - подсчитывать количество ошибок, вызовов и время выполнения для каждого системного вызова;
* **-O** - добавить определённое количество микросекунд к счетчику времени для каждого вызова;
* **-S** - сортировать информацию выводимую при опции -c. Доступны поля time, calls, name и nothing. По умолчанию используется time;
* **-w** - суммировать время между началом и завершением системного вызова;
* **-e** - позволяет отфильтровать только нужные системные вызовы или события;
* **-P** - отслеживать только системные вызовы, которые касаются указанного пути;
* **-v** - позволяет выводить дополнительную информацию, такую как версии окружения, статистику и так далее;
* **-b** - если указанный системный вызов обнаружен, трассировка прекращается;
* **-f** - отслеживать также дочерние процессы, если они будут созданы;
* **-ff** - если задана опция -o, то для каждого дочернего процесса будет создан отдельный файл с именем имя\_файла.pid.
* **-I** - позволяет блокировать реакцию на нажатия Ctrl+C и Ctrl+Z;
* **-E** - добавляет переменную окружения для запускаемой программы;
* **-p** - указывает pid процесса, к которому следует подключиться;
* **-u** - запустить программу, от имени указанного пользователя.

**Strace**

**Лабораторная 1:**

$ strace -f ./parent

execve("./parent", ["./parent"], 0x7ffe0d0f10b8 /\* 34 vars \*/) = 0

brk(NULL) = 0x55ab32794000

arch\_prctl(0x3001 /\* ARCH\_??? \*/, 0x7fffd7e76fa0) = -1 EINVAL (Invalid argument)

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7fef25707000

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

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

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=17231, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 17231, PROT\_READ, MAP\_PRIVATE, 3, 0) = 0x7fef25702000

close(3) = 0

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

read(3, "\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0P\237\2\0\0\0\0\0"..., 832) = 832

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

pread64(3, "\4\0\0\0 \0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0"..., 48, 848) = 48

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\244;\374\204(\337f#\315I\214\234\f\256\271\32"..., 68, 896) = 68

newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=2216304, ...}, AT\_EMPTY\_PATH) = 0

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

mmap(NULL, 2260560, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7fef254da000

mmap(0x7fef25502000, 1658880, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x28000) = 0x7fef25502000

mmap(0x7fef25697000, 360448, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1bd000) = 0x7fef25697000

mmap(0x7fef256ef000, 24576, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x214000) = 0x7fef256ef000

mmap(0x7fef256f5000, 52816, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7fef256f5000

close(3) = 0

mmap(NULL, 12288, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7fef254d7000

arch\_prctl(ARCH\_SET\_FS, 0x7fef254d7740) = 0

set\_tid\_address(0x7fef254d7a10) = 11732

set\_robust\_list(0x7fef254d7a20, 24) = 0

rseq(0x7fef254d80e0, 0x20, 0, 0x53053053) = 0

mprotect(0x7fef256ef000, 16384, PROT\_READ) = 0

mprotect(0x55ab314c4000, 4096, PROT\_READ) = 0

mprotect(0x7fef25741000, 8192, PROT\_READ) = 0

prlimit64(0, RLIMIT\_STACK, NULL, {rlim\_cur=8192\*1024, rlim\_max=RLIM64\_INFINITY}) = 0

munmap(0x7fef25702000, 17231) = 0

getrandom("\xa7\x27\xaa\x28\xeb\x1d\x61\x32", 8, GRND\_NONBLOCK) = 8

brk(NULL) = 0x55ab32794000

brk(0x55ab327b5000) = 0x55ab327b5000

newfstatat(0, "", {st\_mode=S\_IFCHR|0620, st\_rdev=makedev(0x88, 0x4), ...}, AT\_EMPTY\_PATH) = 0

read(0, aaaa

"aaaa\n", 1024) = 5

openat(AT\_FDCWD, "aaaa", O\_WRONLY|O\_CREAT|O\_TRUNC, 0666) = 3

read(0, bbbb

"bbbb\n", 1024) = 5

openat(AT\_FDCWD, "bbbb", O\_WRONLY|O\_CREAT|O\_TRUNC, 0666) = 4

pipe2([5, 6], O\_CLOEXEC) = 0

pipe2([7, 8], O\_CLOEXEC) = 0

clone(child\_stack=NULL, flags=CLONE\_CHILD\_CLEARTID|CLONE\_CHILD\_SETTID|SIGCHLDstrace: Process 11772 attached

, child\_tidptr=0x7fef254d7a10) = 11772

[pid 11772] set\_robust\_list(0x7fef254d7a20, 24 <unfinished ...>

[pid 11732] clone(child\_stack=NULL, flags=CLONE\_CHILD\_CLEARTID|CLONE\_CHILD\_SETTID|SIGCHLD <unfinished ...>

[pid 11772] <... set\_robust\_list resumed>) = 0

strace: Process 11773 attached

[pid 11772] close(6 <unfinished ...>

[pid 11732] <... clone resumed>, child\_tidptr=0x7fef254d7a10) = 11773

[pid 11773] set\_robust\_list(0x7fef254d7a20, 24 <unfinished ...>

[pid 11772] <... close resumed>) = 0

[pid 11732] read(0, <unfinished ...>

[pid 11773] <... set\_robust\_list resumed>) = 0

[pid 11772] dup2(5, 0 <unfinished ...>

[pid 11773] close(8 <unfinished ...>

[pid 11772] <... dup2 resumed>) = 0

[pid 11773] <... close resumed>) = 0

[pid 11772] dup2(3, 1 <unfinished ...>

[pid 11773] dup2(7, 0 <unfinished ...>

[pid 11772] <... dup2 resumed>) = 1

[pid 11773] <... dup2 resumed>) = 0

[pid 11772] execve("./child", ["./child"], 0x7fffd7e77178 /\* 34 vars \*/ <unfinished ...>

[pid 11773] dup2(4, 1) = 1

[pid 11773] execve("./child", ["./child"], 0x7fffd7e77178 /\* 34 vars \*/ <unfinished ...>

[pid 11772] <... execve resumed>) = 0

[pid 11772] brk(NULL) = 0x561fc8e81000

[pid 11772] arch\_prctl(0x3001 /\* ARCH\_??? \*/, 0x7ffed19239b0) = -1 EINVAL (Invalid argument)

[pid 11772] mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7fd5bd676000

[pid 11772] access("/etc/ld.so.preload", R\_OK <unfinished ...>

[pid 11773] <... execve resumed>) = 0

[pid 11772] <... access resumed>) = -1 ENOENT (No such file or directory)

[pid 11773] brk(NULL <unfinished ...>

[pid 11772] openat(AT\_FDCWD, "/etc/ld.so.cache", O\_RDONLY|O\_CLOEXEC <unfinished ...>

[pid 11773] <... brk resumed>) = 0x55c13c608000

[pid 11772] <... openat resumed>) = 5

[pid 11773] arch\_prctl(0x3001 /\* ARCH\_??? \*/, 0x7ffda0542730 <unfinished ...>

[pid 11772] newfstatat(5, "", <unfinished ...>

[pid 11773] <... arch\_prctl resumed>) = -1 EINVAL (Invalid argument)

[pid 11772] <... newfstatat resumed>{st\_mode=S\_IFREG|0644, st\_size=17231, ...}, AT\_EMPTY\_PATH) = 0

[pid 11773] mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f64a1533000

[pid 11772] mmap(NULL, 17231, PROT\_READ, MAP\_PRIVATE, 5, 0 <unfinished ...>

[pid 11773] access("/etc/ld.so.preload", R\_OK <unfinished ...>

[pid 11772] <... mmap resumed>) = 0x7fd5bd671000

[pid 11773] <... access resumed>) = -1 ENOENT (No such file or directory)

[pid 11772] close(5 <unfinished ...>

[pid 11773] openat(AT\_FDCWD, "/etc/ld.so.cache", O\_RDONLY|O\_CLOEXEC <unfinished ...>

[pid 11772] <... close resumed>) = 0

[pid 11773] <... openat resumed>) = 5

[pid 11772] openat(AT\_FDCWD, "/lib/x86\_64-linux-gnu/libc.so.6", O\_RDONLY|O\_CLOEXEC <unfinished ...>

[pid 11773] newfstatat(5, "", <unfinished ...>

[pid 11772] <... openat resumed>) = 5

[pid 11772] read(5, <unfinished ...>

[pid 11773] <... newfstatat resumed>{st\_mode=S\_IFREG|0644, st\_size=17231, ...}, AT\_EMPTY\_PATH) = 0

[pid 11772] <... read resumed>"\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0P\237\2\0\0\0\0\0"..., 832) = 832

[pid 11773] mmap(NULL, 17231, PROT\_READ, MAP\_PRIVATE, 5, 0) = 0x7f64a152e000

[pid 11772] pread64(5, <unfinished ...>

[pid 11773] close(5 <unfinished ...>

[pid 11772] <... pread64 resumed>"\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

[pid 11773] <... close resumed>) = 0

[pid 11772] pread64(5, <unfinished ...>

[pid 11773] openat(AT\_FDCWD, "/lib/x86\_64-linux-gnu/libc.so.6", O\_RDONLY|O\_CLOEXEC <unfinished ...>

[pid 11772] <... pread64 resumed>"\4\0\0\0 \0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0"..., 48, 848) = 48

[pid 11773] <... openat resumed>) = 5

[pid 11772] pread64(5, <unfinished ...>

[pid 11773] read(5, <unfinished ...>

[pid 11772] <... pread64 resumed>"\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\244;\374\204(\337f#\315I\214\234\f\256\271\32"..., 68, 896) = 68

[pid 11773] <... read resumed>"\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0P\237\2\0\0\0\0\0"..., 832) = 832

[pid 11772] newfstatat(5, "", <unfinished ...>

[pid 11773] pread64(5, <unfinished ...>

[pid 11772] <... newfstatat resumed>{st\_mode=S\_IFREG|0755, st\_size=2216304, ...}, AT\_EMPTY\_PATH) = 0

[pid 11773] <... pread64 resumed>"\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

[pid 11772] pread64(5, <unfinished ...>

[pid 11773] pread64(5, <unfinished ...>

[pid 11772] <... pread64 resumed>"\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

[pid 11773] <... pread64 resumed>"\4\0\0\0 \0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0"..., 48, 848) = 48

[pid 11772] mmap(NULL, 2260560, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 5, 0 <unfinished ...>

[pid 11773] pread64(5, <unfinished ...>

[pid 11772] <... mmap resumed>) = 0x7fd5bd449000

[pid 11773] <... pread64 resumed>"\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\244;\374\204(\337f#\315I\214\234\f\256\271\32"..., 68, 896) = 68

[pid 11772] mmap(0x7fd5bd471000, 1658880, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 5, 0x28000 <unfinished ...>

[pid 11773] newfstatat(5, "", <unfinished ...>

[pid 11772] <... mmap resumed>) = 0x7fd5bd471000

[pid 11773] <... newfstatat resumed>{st\_mode=S\_IFREG|0755, st\_size=2216304, ...}, AT\_EMPTY\_PATH) = 0

[pid 11772] mmap(0x7fd5bd606000, 360448, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 5, 0x1bd000 <unfinished ...>

[pid 11773] pread64(5, <unfinished ...>

[pid 11772] <... mmap resumed>) = 0x7fd5bd606000

[pid 11773] <... pread64 resumed>"\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

[pid 11772] mmap(0x7fd5bd65e000, 24576, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 5, 0x214000 <unfinished ...>

[pid 11773] mmap(NULL, 2260560, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 5, 0 <unfinished ...>

[pid 11772] <... mmap resumed>) = 0x7fd5bd65e000

[pid 11773] <... mmap resumed>) = 0x7f64a1306000

[pid 11772] mmap(0x7fd5bd664000, 52816, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0 <unfinished ...>

[pid 11773] mmap(0x7f64a132e000, 1658880, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 5, 0x28000 <unfinished ...>

[pid 11772] <... mmap resumed>) = 0x7fd5bd664000

[pid 11773] <... mmap resumed>) = 0x7f64a132e000

[pid 11772] close(5 <unfinished ...>

[pid 11773] mmap(0x7f64a14c3000, 360448, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 5, 0x1bd000 <unfinished ...>

[pid 11772] <... close resumed>) = 0

[pid 11773] <... mmap resumed>) = 0x7f64a14c3000

[pid 11772] mmap(NULL, 12288, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0 <unfinished ...>

[pid 11773] mmap(0x7f64a151b000, 24576, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 5, 0x214000 <unfinished ...>

[pid 11772] <... mmap resumed>) = 0x7fd5bd446000

[pid 11773] <... mmap resumed>) = 0x7f64a151b000

[pid 11772] arch\_prctl(ARCH\_SET\_FS, 0x7fd5bd446740 <unfinished ...>

[pid 11773] mmap(0x7f64a1521000, 52816, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0 <unfinished ...>

[pid 11772] <... arch\_prctl resumed>) = 0

[pid 11773] <... mmap resumed>) = 0x7f64a1521000

[pid 11772] set\_tid\_address(0x7fd5bd446a10 <unfinished ...>

[pid 11773] close(5 <unfinished ...>

[pid 11772] <... set\_tid\_address resumed>) = 11772

[pid 11773] <... close resumed>) = 0

[pid 11772] set\_robust\_list(0x7fd5bd446a20, 24 <unfinished ...>

[pid 11773] mmap(NULL, 12288, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0 <unfinished ...>

[pid 11772] <... set\_robust\_list resumed>) = 0

[pid 11773] <... mmap resumed>) = 0x7f64a1303000

[pid 11772] rseq(0x7fd5bd4470e0, 0x20, 0, 0x53053053 <unfinished ...>

[pid 11773] arch\_prctl(ARCH\_SET\_FS, 0x7f64a1303740 <unfinished ...>

[pid 11772] <... rseq resumed>) = 0

[pid 11773] <... arch\_prctl resumed>) = 0

[pid 11773] set\_tid\_address(0x7f64a1303a10 <unfinished ...>

[pid 11772] mprotect(0x7fd5bd65e000, 16384, PROT\_READ <unfinished ...>

[pid 11773] <... set\_tid\_address resumed>) = 11773

[pid 11772] <... mprotect resumed>) = 0

[pid 11773] set\_robust\_list(0x7f64a1303a20, 24 <unfinished ...>

[pid 11772] mprotect(0x561fc7a9e000, 4096, PROT\_READ <unfinished ...>

[pid 11773] <... set\_robust\_list resumed>) = 0

[pid 11772] <... mprotect resumed>) = 0

[pid 11773] rseq(0x7f64a13040e0, 0x20, 0, 0x53053053 <unfinished ...>

[pid 11772] mprotect(0x7fd5bd6b0000, 8192, PROT\_READ <unfinished ...>

[pid 11773] <... rseq resumed>) = 0

[pid 11772] <... mprotect resumed>) = 0

[pid 11773] mprotect(0x7f64a151b000, 16384, PROT\_READ <unfinished ...>

[pid 11772] prlimit64(0, RLIMIT\_STACK, NULL, {rlim\_cur=8192\*1024, rlim\_max=RLIM64\_INFINITY}) = 0

[pid 11773] <... mprotect resumed>) = 0

[pid 11773] mprotect(0x55c13c055000, 4096, PROT\_READ <unfinished ...>

[pid 11772] munmap(0x7fd5bd671000, 17231 <unfinished ...>

[pid 11773] <... mprotect resumed>) = 0

[pid 11772] <... munmap resumed>) = 0

[pid 11773] mprotect(0x7f64a156d000, 8192, PROT\_READ <unfinished ...>

[pid 11772] read(0, <unfinished ...>

[pid 11773] <... mprotect resumed>) = 0

[pid 11773] prlimit64(0, RLIMIT\_STACK, NULL, {rlim\_cur=8192\*1024, rlim\_max=RLIM64\_INFINITY}) = 0

[pid 11773] munmap(0x7f64a152e000, 17231) = 0

[pid 11773] read(0, qwerty

<unfinished ...>

[pid 11732] <... read resumed>"qwerty\n", 1024) = 7

[pid 11732] write(6, "q\0\0\0", 4) = 4

[pid 11772] <... read resumed>"q\0\0\0", 4) = 4

[pid 11732] write(6, "w\0\0\0", 4 <unfinished ...>

[pid 11772] write(1, "q", 1 <unfinished ...>

[pid 11732] <... write resumed>) = 4

[pid 11732] write(6, "e\0\0\0", 4) = 4

[pid 11732] write(6, "r\0\0\0", 4) = 4

[pid 11732] write(6, "t\0\0\0", 4) = 4

[pid 11732] write(6, "y\0\0\0", 4) = 4

[pid 11732] write(6, "\n\0\0\0", 4) = 4

[pid 11732] read(0, <unfinished ...>

[pid 11772] <... write resumed>) = 1

[pid 11772] read(0, "w\0\0\0", 4) = 4

[pid 11772] write(1, "w", 1) = 1

[pid 11772] read(0, "e\0\0\0", 4) = 4

[pid 11772] read(0, "r\0\0\0", 4) = 4

[pid 11772] write(1, "r", 1) = 1

[pid 11772] read(0, "t\0\0\0", 4) = 4

[pid 11772] write(1, "t", 1) = 1

[pid 11772] read(0, "y\0\0\0", 4) = 4

[pid 11772] read(0, "\n\0\0\0", 4) = 4

[pid 11772] write(1, "\n", 1) = 1

[pid 11772] read(0, uyytr

<unfinished ...>

[pid 11732] <... read resumed>"uyytr\n", 1024) = 6

[pid 11732] write(8, "u\0\0\0", 4) = 4

[pid 11773] <... read resumed>"u\0\0\0", 4) = 4

[pid 11732] write(8, "y\0\0\0", 4 <unfinished ...>

[pid 11773] read(0, <unfinished ...>

[pid 11732] <... write resumed>) = 4

[pid 11773] <... read resumed>"y\0\0\0", 4) = 4

[pid 11732] write(8, "y\0\0\0", 4 <unfinished ...>

[pid 11773] read(0, <unfinished ...>

[pid 11732] <... write resumed>) = 4

[pid 11773] <... read resumed>"y\0\0\0", 4) = 4

[pid 11732] write(8, "t\0\0\0", 4 <unfinished ...>

[pid 11773] read(0, <unfinished ...>

[pid 11732] <... write resumed>) = 4

[pid 11773] <... read resumed>"t\0\0\0", 4) = 4

[pid 11732] write(8, "r\0\0\0", 4 <unfinished ...>

[pid 11773] write(1, "t", 1 <unfinished ...>

[pid 11732] <... write resumed>) = 4

[pid 11732] write(8, "\n\0\0\0", 4) = 4

[pid 11732] read(0, <unfinished ...>

[pid 11773] <... write resumed>) = 1

[pid 11773] read(0, "r\0\0\0", 4) = 4

[pid 11773] write(1, "r", 1) = 1

[pid 11773] read(0, "\n\0\0\0", 4) = 4

[pid 11773] write(1, "\n", 1) = 1

[pid 11773] read(0, qweasd

<unfinished ...>

[pid 11732] <... read resumed>"qweasd\n", 1024) = 7

[pid 11732] write(6, "q\0\0\0", 4) = 4

[pid 11772] <... read resumed>"q\0\0\0", 4) = 4

[pid 11732] write(6, "w\0\0\0", 4 <unfinished ...>

[pid 11772] write(1, "q", 1 <unfinished ...>

[pid 11732] <... write resumed>) = 4

[pid 11732] write(6, "e\0\0\0", 4) = 4

[pid 11732] write(6, "a\0\0\0", 4) = 4

[pid 11732] write(6, "s\0\0\0", 4) = 4

[pid 11732] write(6, "d\0\0\0", 4) = 4

[pid 11732] write(6, "\n\0\0\0", 4) = 4

[pid 11732] read(0, <unfinished ...>

[pid 11772] <... write resumed>) = 1

[pid 11772] read(0, "w\0\0\0", 4) = 4

[pid 11772] write(1, "w", 1) = 1

[pid 11772] read(0, "e\0\0\0", 4) = 4

[pid 11772] read(0, "a\0\0\0", 4) = 4

[pid 11772] read(0, "s\0\0\0", 4) = 4

[pid 11772] write(1, "s", 1) = 1

[pid 11772] read(0, "d\0\0\0", 4) = 4

[pid 11772] write(1, "d", 1) = 1

[pid 11772] read(0, "\n\0\0\0", 4) = 4

[pid 11772] write(1, "\n", 1) = 1

[pid 11772] read(0, qwe

<unfinished ...>

[pid 11732] <... read resumed>"qwe\n", 1024) = 4

[pid 11732] write(8, "q\0\0\0", 4) = 4

[pid 11773] <... read resumed>"q\0\0\0", 4) = 4

[pid 11732] write(8, "w\0\0\0", 4) = 4

[pid 11773] write(1, "q", 1 <unfinished ...>

[pid 11732] write(8, "e\0\0\0", 4) = 4

[pid 11732] write(8, "\n\0\0\0", 4) = 4

[pid 11732] read(0, <unfinished ...>

[pid 11773] <... write resumed>) = 1

[pid 11773] read(0, "w\0\0\0", 4) = 4

[pid 11773] write(1, "w", 1) = 1

[pid 11773] read(0, "e\0\0\0", 4) = 4

[pid 11773] read(0, "\n\0\0\0", 4) = 4

[pid 11773] write(1, "\n", 1) = 1

[pid 11773] read(0, <unfinished ...>

[pid 11732] <... read resumed>"", 1024) = 0

[pid 11732] close(8) = 0

[pid 11732] close(6 <unfinished ...>

[pid 11773] <... read resumed>"", 4) = 0

[pid 11732] <... close resumed>) = 0

[pid 11773] close(0 <unfinished ...>

[pid 11772] <... read resumed>"", 4) = 0

[pid 11732] wait4(-1, <unfinished ...>

[pid 11773] <... close resumed>) = 0

[pid 11772] close(0 <unfinished ...>

[pid 11773] exit\_group(0 <unfinished ...>

[pid 11772] <... close resumed>) = 0

[pid 11773] <... exit\_group resumed>) = ?

[pid 11772] exit\_group(0) = ?

[pid 11773] +++ exited with 0 +++

[pid 11772] +++ exited with 0 +++

<... wait4 resumed>NULL, 0, NULL) = 11772

--- SIGCHLD {si\_signo=SIGCHLD, si\_code=CLD\_EXITED, si\_pid=11773, si\_uid=1000, si\_status=0, si\_utime=0, si\_stime=1} ---

exit\_group(0) = ?

+++ exited with 0 +++

**Лабораторная 2:**

$ strace -f ./a.out 2

execve("./a.out", ["./a.out", "2"], 0x7ffd268697c0 /\* 36 vars \*/) = 0

brk(NULL) = 0x559786f32000

arch\_prctl(0x3001 /\* ARCH\_??? \*/, 0x7ffd8c3b0c00) = -1 EINVAL (Invalid argument)

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7fb6e42c4000

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

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

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=18151, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 18151, PROT\_READ, MAP\_PRIVATE, 3, 0) = 0x7fb6e42bf000

close(3) = 0

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

read(3, "\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0P\237\2\0\0\0\0\0"..., 832) = 832

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

pread64(3, "\4\0\0\0 \0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0"..., 48, 848) = 48

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\244;\374\204(\337f#\315I\214\234\f\256\271\32"..., 68, 896) = 68

newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=2216304, ...}, AT\_EMPTY\_PATH) = 0

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

mmap(NULL, 2260560, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7fb6e4097000

mmap(0x7fb6e40bf000, 1658880, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x28000) = 0x7fb6e40bf000

mmap(0x7fb6e4254000, 360448, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1bd000) = 0x7fb6e4254000

mmap(0x7fb6e42ac000, 24576, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x214000) = 0x7fb6e42ac000

mmap(0x7fb6e42b2000, 52816, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7fb6e42b2000

close(3) = 0

mmap(NULL, 12288, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7fb6e4094000

arch\_prctl(ARCH\_SET\_FS, 0x7fb6e4094740) = 0

set\_tid\_address(0x7fb6e4094a10) = 3863

set\_robust\_list(0x7fb6e4094a20, 24) = 0

rseq(0x7fb6e40950e0, 0x20, 0, 0x53053053) = 0

mprotect(0x7fb6e42ac000, 16384, PROT\_READ) = 0

mprotect(0x559785386000, 4096, PROT\_READ) = 0

mprotect(0x7fb6e42fe000, 8192, PROT\_READ) = 0

prlimit64(0, RLIMIT\_STACK, NULL, {rlim\_cur=8192\*1024, rlim\_max=RLIM64\_INFINITY}) = 0

munmap(0x7fb6e42bf000, 18151) = 0

newfstatat(1, "", {st\_mode=S\_IFCHR|0620, st\_rdev=makedev(0x88, 0x4), ...}, AT\_EMPTY\_PATH) = 0

getrandom("\xeb\xfe\x18\x76\xab\x28\xa4\x68", 8, GRND\_NONBLOCK) = 8

brk(NULL) = 0x559786f32000

brk(0x559786f53000) = 0x559786f53000

newfstatat(0, "", {st\_mode=S\_IFCHR|0620, st\_rdev=makedev(0x88, 0x4), ...}, AT\_EMPTY\_PATH) = 0

write(1, "Please enter the matrix dimensio"..., 35Please enter the matrix dimension: ) = 35

read(0, 4

"4\n", 1024) = 2

read(0, 1 2 3 4

"1 2 3 4\n", 1024) = 8

read(0, 67 34 0 9

"67 34 0 9\n", 1024) = 10

read(0, 12 3 4 1

"12 3 4 1\n", 1024) = 9

read(0, 2 45 60

"2 45 60\n", 1024) = 8

read(0, 89

"89\n", 1024) = 3

rt\_sigaction(SIGRT\_1, {sa\_handler=0x7fb6e4128870, sa\_mask=[], sa\_flags=SA\_RESTORER|SA\_ONSTACK|SA\_RESTART|SA\_SIGINFO, sa\_restorer=0x7fb6e40d9520}, NULL, 8) = 0

rt\_sigprocmask(SIG\_UNBLOCK, [RTMIN RT\_1], NULL, 8) = 0

mmap(NULL, 8392704, PROT\_NONE, MAP\_PRIVATE|MAP\_ANONYMOUS|MAP\_STACK, -1, 0) = 0x7fb6e3893000

mprotect(0x7fb6e3894000, 8388608, PROT\_READ|PROT\_WRITE) = 0

rt\_sigprocmask(SIG\_BLOCK, ~[], [], 8) = 0

clone3({flags=CLONE\_VM|CLONE\_FS|CLONE\_FILES|CLONE\_SIGHAND|CLONE\_THREAD|CLONE\_SYSVSEM|CLONE\_SETTLS|CLONE\_PARENT\_SETTID|CLONE\_CHILD\_CLEARTID, child\_tid=0x7fb6e4093910, parent\_tid=0x7fb6e4093910, exit\_signal=0, stack=0x7fb6e3893000, stack\_size=0x7fff00, tls=0x7fb6e4093640}strace: Process 3992 attached

=> {parent\_tid=[3992]}, 88) = 3992

[pid 3863] rt\_sigprocmask(SIG\_SETMASK, [], <unfinished ...>

[pid 3992] rseq(0x7fb6e4093fe0, 0x20, 0, 0x53053053 <unfinished ...>

[pid 3863] <... rt\_sigprocmask resumed>NULL, 8) = 0

[pid 3992] <... rseq resumed>) = 0

[pid 3863] mmap(NULL, 8392704, PROT\_NONE, MAP\_PRIVATE|MAP\_ANONYMOUS|MAP\_STACK, -1, 0 <unfinished ...>

[pid 3992] set\_robust\_list(0x7fb6e4093920, 24 <unfinished ...>

[pid 3863] <... mmap resumed>) = 0x7fb6e3092000

[pid 3992] <... set\_robust\_list resumed>) = 0

[pid 3863] mprotect(0x7fb6e3093000, 8388608, PROT\_READ|PROT\_WRITE <unfinished ...>

[pid 3992] rt\_sigprocmask(SIG\_SETMASK, [], <unfinished ...>

[pid 3863] <... mprotect resumed>) = 0

[pid 3992] <... rt\_sigprocmask resumed>NULL, 8) = 0

[pid 3863] rt\_sigprocmask(SIG\_BLOCK, ~[], <unfinished ...>

[pid 3992] write(1, "\320\275\320\276\320\274\320\265\321\200 \320\277\320\276\321\202\320\276\320\272\320\260: 1 \n", 28номер потока: 1

<unfinished ...>

[pid 3863] <... rt\_sigprocmask resumed>[], 8) = 0

[pid 3992] <... write resumed>) = 28

[pid 3863] clone3({flags=CLONE\_VM|CLONE\_FS|CLONE\_FILES|CLONE\_SIGHAND|CLONE\_THREAD|CLONE\_SYSVSEM|CLONE\_SETTLS|CLONE\_PARENT\_SETTID|CLONE\_CHILD\_CLEARTID, child\_tid=0x7fb6e3892910, parent\_tid=0x7fb6e3892910, exit\_signal=0, stack=0x7fb6e3092000, stack\_size=0x7fff00, tls=0x7fb6e3892640} <unfinished ...>

[pid 3992] openat(AT\_FDCWD, "/etc/ld.so.cache", O\_RDONLY|O\_CLOEXECstrace: Process 3993 attached

) = 3

[pid 3863] <... clone3 resumed> => {parent\_tid=[3993]}, 88) = 3993

[pid 3993] rseq(0x7fb6e3892fe0, 0x20, 0, 0x53053053 <unfinished ...>

[pid 3863] rt\_sigprocmask(SIG\_SETMASK, [], <unfinished ...>

[pid 3992] newfstatat(3, "", <unfinished ...>

[pid 3863] <... rt\_sigprocmask resumed>NULL, 8) = 0

[pid 3993] <... rseq resumed>) = 0

[pid 3863] futex(0x7fb6e4093910, FUTEX\_WAIT\_BITSET|FUTEX\_CLOCK\_REALTIME, 3992, NULL, FUTEX\_BITSET\_MATCH\_ANY <unfinished ...>

[pid 3992] <... newfstatat resumed>{st\_mode=S\_IFREG|0644, st\_size=18151, ...}, AT\_EMPTY\_PATH) = 0

[pid 3993] set\_robust\_list(0x7fb6e3892920, 24 <unfinished ...>

[pid 3992] mmap(NULL, 18151, PROT\_READ, MAP\_PRIVATE, 3, 0 <unfinished ...>

[pid 3993] <... set\_robust\_list resumed>) = 0

[pid 3992] <... mmap resumed>) = 0x7fb6e42bf000

[pid 3993] rt\_sigprocmask(SIG\_SETMASK, [], <unfinished ...>

[pid 3992] close(3 <unfinished ...>

[pid 3993] <... rt\_sigprocmask resumed>NULL, 8) = 0

[pid 3992] <... close resumed>) = 0

[pid 3993] write(1, "\320\275\320\276\320\274\320\265\321\200 \320\277\320\276\321\202\320\276\320\272\320\260: 2 \n", 28 <unfinished ...>

[pid 3992] mmap(NULL, 134217728, PROT\_NONE, MAP\_PRIVATE|MAP\_ANONYMOUS|MAP\_NORESERVE, -1, 0номер потока: 2

<unfinished ...>

[pid 3993] <... write resumed>) = 28

[pid 3992] <... mmap resumed>) = 0x7fb6db092000

[pid 3993] futex(0x7fb6e4300a48, FUTEX\_WAIT\_PRIVATE, 2, NULL <unfinished ...>

[pid 3992] munmap(0x7fb6db092000, 16179200) = 0

[pid 3992] munmap(0x7fb6e0000000, 50929664) = 0

[pid 3992] mprotect(0x7fb6dc000000, 135168, PROT\_READ|PROT\_WRITE) = 0

[pid 3992] openat(AT\_FDCWD, "/lib/x86\_64-linux-gnu/libgcc\_s.so.1", O\_RDONLY|O\_CLOEXEC) = 3

[pid 3992] read(3, "\177ELF\2\1\1\0\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0\0\0\0\0\0\0\0\0"..., 832) = 832

[pid 3992] newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=125488, ...}, AT\_EMPTY\_PATH) = 0

[pid 3992] mmap(NULL, 127720, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7fb6e3072000

[pid 3992] mmap(0x7fb6e3075000, 94208, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x3000) = 0x7fb6e3075000

[pid 3992] mmap(0x7fb6e308c000, 16384, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1a000) = 0x7fb6e308c000

[pid 3992] mmap(0x7fb6e3090000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1d000) = 0x7fb6e3090000

[pid 3992] close(3) = 0

[pid 3992] mprotect(0x7fb6e3090000, 4096, PROT\_READ) = 0

[pid 3992] munmap(0x7fb6e42bf000, 18151) = 0

[pid 3992] futex(0x7fb6e4300a48, FUTEX\_WAKE\_PRIVATE, 1 <unfinished ...>

[pid 3993] <... futex resumed>) = 0

[pid 3992] <... futex resumed>) = 1

[pid 3993] futex(0x7fb6e4300a48, FUTEX\_WAKE\_PRIVATE, 1 <unfinished ...>

[pid 3992] futex(0x7fb6e3091210, FUTEX\_WAKE\_PRIVATE, 2147483647 <unfinished ...>

[pid 3993] <... futex resumed>) = 0

[pid 3992] <... futex resumed>) = 0

[pid 3993] rt\_sigprocmask(SIG\_BLOCK, ~[RT\_1], <unfinished ...>

[pid 3992] rt\_sigprocmask(SIG\_BLOCK, ~[RT\_1], <unfinished ...>

[pid 3993] <... rt\_sigprocmask resumed>NULL, 8) = 0

[pid 3992] <... rt\_sigprocmask resumed>NULL, 8) = 0

[pid 3993] madvise(0x7fb6e3092000, 8368128, MADV\_DONTNEED <unfinished ...>

[pid 3992] madvise(0x7fb6e3893000, 8368128, MADV\_DONTNEED <unfinished ...>

[pid 3993] <... madvise resumed>) = 0

[pid 3992] <... madvise resumed>) = 0

[pid 3993] exit(0 <unfinished ...>

[pid 3992] exit(0 <unfinished ...>

[pid 3993] <... exit resumed>) = ?

[pid 3992] <... exit resumed>) = ?

[pid 3993] +++ exited with 0 +++

[pid 3863] <... futex resumed>) = 0

[pid 3992] +++ exited with 0 +++

write(1, "\320\236\321\202\320\262\320\265\321\202: 4724 \n", 18Ответ: 4724

) = 18

lseek(0, -1, SEEK\_CUR) = -1 ESPIPE (Illegal seek)

exit\_group(0) = ?

+++ exited with 0 +++

**Лабораторная 3:**

$ strace -f ./parent

execve("./parent", ["./parent"], 0x7ffd95cc05e8 /\* 36 vars \*/) = 0

brk(NULL) = 0x556b2bc64000

arch\_prctl(0x3001 /\* ARCH\_??? \*/, 0x7ffc089c41f0) = -1 EINVAL (Invalid argument)

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f9a09803000

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

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

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=18151, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 18151, PROT\_READ, MAP\_PRIVATE, 3, 0) = 0x7f9a097fe000

close(3) = 0

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

read(3, "\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0P\237\2\0\0\0\0\0"..., 832) = 832

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

pread64(3, "\4\0\0\0 \0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0"..., 48, 848) = 48

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\244;\374\204(\337f#\315I\214\234\f\256\271\32"..., 68, 896) = 68

newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=2216304, ...}, AT\_EMPTY\_PATH) = 0

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

mmap(NULL, 2260560, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f9a095d6000

mmap(0x7f9a095fe000, 1658880, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x28000) = 0x7f9a095fe000

mmap(0x7f9a09793000, 360448, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1bd000) = 0x7f9a09793000

mmap(0x7f9a097eb000, 24576, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x214000) = 0x7f9a097eb000

mmap(0x7f9a097f1000, 52816, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7f9a097f1000

close(3) = 0

mmap(NULL, 12288, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f9a095d3000

arch\_prctl(ARCH\_SET\_FS, 0x7f9a095d3740) = 0

set\_tid\_address(0x7f9a095d3a10) = 4189

set\_robust\_list(0x7f9a095d3a20, 24) = 0

rseq(0x7f9a095d40e0, 0x20, 0, 0x53053053) = 0

mprotect(0x7f9a097eb000, 16384, PROT\_READ) = 0

mprotect(0x556b2ab99000, 4096, PROT\_READ) = 0

mprotect(0x7f9a0983d000, 8192, PROT\_READ) = 0

prlimit64(0, RLIMIT\_STACK, NULL, {rlim\_cur=8192\*1024, rlim\_max=RLIM64\_INFINITY}) = 0

munmap(0x7f9a097fe000, 18151) = 0

getrandom("\xac\x8d\xc6\x8c\xd7\x6c\x03\xc7", 8, GRND\_NONBLOCK) = 8

brk(NULL) = 0x556b2bc64000

brk(0x556b2bc85000) = 0x556b2bc85000

newfstatat(0, "", {st\_mode=S\_IFCHR|0620, st\_rdev=makedev(0x88, 0x4), ...}, AT\_EMPTY\_PATH) = 0

read(0, aaaa

"aaaa\n", 1024) = 5

openat(AT\_FDCWD, "aaaa", O\_WRONLY|O\_CREAT|O\_TRUNC, 0666) = 3

read(0, bbbb

"bbbb\n", 1024) = 5

openat(AT\_FDCWD, "bbbb", O\_WRONLY|O\_CREAT|O\_TRUNC, 0666) = 4

openat(AT\_FDCWD, "/dev/shm/first\_mmf", O\_RDWR|O\_CREAT|O\_TRUNC|O\_NOFOLLOW|O\_CLOEXEC, 0777) = 5

ftruncate(5, 2000) = 0

mmap(NULL, 2000, PROT\_READ|PROT\_WRITE, MAP\_SHARED, 5, 0) = 0x7f9a0983c000

openat(AT\_FDCWD, "/dev/shm/second\_mmf", O\_RDWR|O\_CREAT|O\_TRUNC|O\_NOFOLLOW|O\_CLOEXEC, 0777) = 6

ftruncate(6, 2000) = 0

mmap(NULL, 2000, PROT\_READ|PROT\_WRITE, MAP\_SHARED, 6, 0) = 0x7f9a09802000

clone(child\_stack=NULL, flags=CLONE\_CHILD\_CLEARTID|CLONE\_CHILD\_SETTID|SIGCHLDstrace: Process 4208 attached

, child\_tidptr=0x7f9a095d3a10) = 4208

[pid 4208] set\_robust\_list(0x7f9a095d3a20, 24 <unfinished ...>

[pid 4189] clone(child\_stack=NULL, flags=CLONE\_CHILD\_CLEARTID|CLONE\_CHILD\_SETTID|SIGCHLD <unfinished ...>

[pid 4208] <... set\_robust\_list resumed>) = 0

[pid 4208] dup2(3, 1strace: Process 4209 attached

<unfinished ...>

[pid 4189] <... clone resumed>, child\_tidptr=0x7f9a095d3a10) = 4209

[pid 4208] <... dup2 resumed>) = 1

[pid 4189] read(0, <unfinished ...>

[pid 4209] set\_robust\_list(0x7f9a095d3a20, 24 <unfinished ...>

[pid 4208] execve("./child", ["./child", "5"], 0x7ffc089c43c8 /\* 36 vars \*/ <unfinished ...>

[pid 4209] <... set\_robust\_list resumed>) = 0

[pid 4209] dup2(4, 1) = 1

[pid 4209] execve("./child", ["./child", "6"], 0x7ffc089c43c8 /\* 36 vars \*/) = 0

[pid 4209] brk(NULL <unfinished ...>

[pid 4208] <... execve resumed>) = 0

[pid 4209] <... brk resumed>) = 0x55b5200db000

[pid 4209] arch\_prctl(0x3001 /\* ARCH\_??? \*/, 0x7ffd5eee27f0) = -1 EINVAL (Invalid argument)

[pid 4209] mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7fefe252e000

[pid 4209] access("/etc/ld.so.preload", R\_OK) = -1 ENOENT (No such file or directory)

[pid 4209] openat(AT\_FDCWD, "/etc/ld.so.cache", O\_RDONLY|O\_CLOEXEC) = 7

[pid 4209] newfstatat(7, "", {st\_mode=S\_IFREG|0644, st\_size=18151, ...}, AT\_EMPTY\_PATH) = 0

[pid 4209] mmap(NULL, 18151, PROT\_READ, MAP\_PRIVATE, 7, 0 <unfinished ...>

[pid 4208] brk(NULL <unfinished ...>

[pid 4209] <... mmap resumed>) = 0x7fefe2529000

[pid 4208] <... brk resumed>) = 0x55c86e4af000

[pid 4209] close(7) = 0

[pid 4208] arch\_prctl(0x3001 /\* ARCH\_??? \*/, 0x7ffe45e420d0 <unfinished ...>

[pid 4209] openat(AT\_FDCWD, "/lib/x86\_64-linux-gnu/libc.so.6", O\_RDONLY|O\_CLOEXEC <unfinished ...>

[pid 4208] <... arch\_prctl resumed>) = -1 EINVAL (Invalid argument)

[pid 4209] <... openat resumed>) = 7

[pid 4208] mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0 <unfinished ...>

[pid 4209] read(7, <unfinished ...>

[pid 4208] <... mmap resumed>) = 0x7fded8be3000

[pid 4209] <... read resumed>"\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0P\237\2\0\0\0\0\0"..., 832) = 832

[pid 4208] access("/etc/ld.so.preload", R\_OK <unfinished ...>

[pid 4209] pread64(7, <unfinished ...>

[pid 4208] <... access resumed>) = -1 ENOENT (No such file or directory)

[pid 4209] <... pread64 resumed>"\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

[pid 4208] openat(AT\_FDCWD, "/etc/ld.so.cache", O\_RDONLY|O\_CLOEXEC <unfinished ...>

[pid 4209] pread64(7, <unfinished ...>

[pid 4208] <... openat resumed>) = 7

[pid 4209] <... pread64 resumed>"\4\0\0\0 \0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0"..., 48, 848) = 48

[pid 4208] newfstatat(7, "", <unfinished ...>

[pid 4209] pread64(7, <unfinished ...>

[pid 4208] <... newfstatat resumed>{st\_mode=S\_IFREG|0644, st\_size=18151, ...}, AT\_EMPTY\_PATH) = 0

[pid 4209] <... pread64 resumed>"\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\244;\374\204(\337f#\315I\214\234\f\256\271\32"..., 68, 896) = 68

[pid 4208] mmap(NULL, 18151, PROT\_READ, MAP\_PRIVATE, 7, 0 <unfinished ...>

[pid 4209] newfstatat(7, "", <unfinished ...>

[pid 4208] <... mmap resumed>) = 0x7fded8bde000

[pid 4209] <... newfstatat resumed>{st\_mode=S\_IFREG|0755, st\_size=2216304, ...}, AT\_EMPTY\_PATH) = 0

[pid 4208] close(7 <unfinished ...>

[pid 4209] pread64(7, <unfinished ...>

[pid 4208] <... close resumed>) = 0

[pid 4209] <... pread64 resumed>"\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

[pid 4208] openat(AT\_FDCWD, "/lib/x86\_64-linux-gnu/libc.so.6", O\_RDONLY|O\_CLOEXEC <unfinished ...>

[pid 4209] mmap(NULL, 2260560, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 7, 0 <unfinished ...>

[pid 4208] <... openat resumed>) = 7

[pid 4209] <... mmap resumed>) = 0x7fefe2301000

[pid 4208] read(7, <unfinished ...>

[pid 4209] mmap(0x7fefe2329000, 1658880, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 7, 0x28000 <unfinished ...>

[pid 4208] <... read resumed>"\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0P\237\2\0\0\0\0\0"..., 832) = 832

[pid 4209] <... mmap resumed>) = 0x7fefe2329000

[pid 4208] pread64(7, <unfinished ...>

[pid 4209] mmap(0x7fefe24be000, 360448, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 7, 0x1bd000 <unfinished ...>

[pid 4208] <... pread64 resumed>"\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

[pid 4209] <... mmap resumed>) = 0x7fefe24be000

[pid 4208] pread64(7, <unfinished ...>

[pid 4209] mmap(0x7fefe2516000, 24576, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 7, 0x214000 <unfinished ...>

[pid 4208] <... pread64 resumed>"\4\0\0\0 \0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0"..., 48, 848) = 48

[pid 4209] <... mmap resumed>) = 0x7fefe2516000

[pid 4208] pread64(7, <unfinished ...>

[pid 4209] mmap(0x7fefe251c000, 52816, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0 <unfinished ...>

[pid 4208] <... pread64 resumed>"\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\244;\374\204(\337f#\315I\214\234\f\256\271\32"..., 68, 896) = 68

[pid 4209] <... mmap resumed>) = 0x7fefe251c000

[pid 4208] newfstatat(7, "", <unfinished ...>

[pid 4209] close(7 <unfinished ...>

[pid 4208] <... newfstatat resumed>{st\_mode=S\_IFREG|0755, st\_size=2216304, ...}, AT\_EMPTY\_PATH) = 0

[pid 4209] <... close resumed>) = 0

[pid 4208] pread64(7, <unfinished ...>

[pid 4209] mmap(NULL, 12288, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0 <unfinished ...>

[pid 4208] <... pread64 resumed>"\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

[pid 4209] <... mmap resumed>) = 0x7fefe22fe000

[pid 4208] mmap(NULL, 2260560, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 7, 0 <unfinished ...>

[pid 4209] arch\_prctl(ARCH\_SET\_FS, 0x7fefe22fe740 <unfinished ...>

[pid 4208] <... mmap resumed>) = 0x7fded89b6000

[pid 4209] <... arch\_prctl resumed>) = 0

[pid 4208] mmap(0x7fded89de000, 1658880, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 7, 0x28000 <unfinished ...>

[pid 4209] set\_tid\_address(0x7fefe22fea10 <unfinished ...>

[pid 4208] <... mmap resumed>) = 0x7fded89de000

[pid 4209] <... set\_tid\_address resumed>) = 4209

[pid 4208] mmap(0x7fded8b73000, 360448, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 7, 0x1bd000 <unfinished ...>

[pid 4209] set\_robust\_list(0x7fefe22fea20, 24 <unfinished ...>

[pid 4208] <... mmap resumed>) = 0x7fded8b73000

[pid 4209] <... set\_robust\_list resumed>) = 0

[pid 4208] mmap(0x7fded8bcb000, 24576, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 7, 0x214000 <unfinished ...>

[pid 4209] rseq(0x7fefe22ff0e0, 0x20, 0, 0x53053053 <unfinished ...>

[pid 4208] <... mmap resumed>) = 0x7fded8bcb000

[pid 4209] <... rseq resumed>) = 0

[pid 4208] mmap(0x7fded8bd1000, 52816, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0 <unfinished ...>

[pid 4209] mprotect(0x7fefe2516000, 16384, PROT\_READ <unfinished ...>

[pid 4208] <... mmap resumed>) = 0x7fded8bd1000

[pid 4209] <... mprotect resumed>) = 0

[pid 4209] mprotect(0x55b51fdc9000, 4096, PROT\_READ <unfinished ...>

[pid 4208] close(7 <unfinished ...>

[pid 4209] <... mprotect resumed>) = 0

[pid 4208] <... close resumed>) = 0

[pid 4209] mprotect(0x7fefe2568000, 8192, PROT\_READ <unfinished ...>

[pid 4208] mmap(NULL, 12288, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0 <unfinished ...>

[pid 4209] <... mprotect resumed>) = 0

[pid 4208] <... mmap resumed>) = 0x7fded89b3000

[pid 4209] prlimit64(0, RLIMIT\_STACK, NULL, <unfinished ...>

[pid 4208] arch\_prctl(ARCH\_SET\_FS, 0x7fded89b3740 <unfinished ...>

[pid 4209] <... prlimit64 resumed>{rlim\_cur=8192\*1024, rlim\_max=RLIM64\_INFINITY}) = 0

[pid 4208] <... arch\_prctl resumed>) = 0

[pid 4209] munmap(0x7fefe2529000, 18151 <unfinished ...>

[pid 4208] set\_tid\_address(0x7fded89b3a10 <unfinished ...>

[pid 4209] <... munmap resumed>) = 0

[pid 4208] <... set\_tid\_address resumed>) = 4208

[pid 4209] mmap(NULL, 2000, PROT\_READ|PROT\_WRITE, MAP\_SHARED, 6, 0 <unfinished ...>

[pid 4208] set\_robust\_list(0x7fded89b3a20, 24 <unfinished ...>

[pid 4209] <... mmap resumed>) = 0x7fefe2567000

[pid 4208] <... set\_robust\_list resumed>) = 0

[pid 4209] rt\_sigaction(SIGUSR1, {sa\_handler=0x55b51fdc7229, sa\_mask=[USR1], sa\_flags=SA\_RESTORER|SA\_RESTART, sa\_restorer=0x7fefe2343520}, <unfinished ...>

[pid 4208] rseq(0x7fded89b40e0, 0x20, 0, 0x53053053 <unfinished ...>

[pid 4209] <... rt\_sigaction resumed>{sa\_handler=SIG\_DFL, sa\_mask=[], sa\_flags=0}, 8) = 0

[pid 4208] <... rseq resumed>) = 0

[pid 4209] rt\_sigaction(SIGUSR2, {sa\_handler=0x55b51fdc7339, sa\_mask=[USR2], sa\_flags=SA\_RESTORER|SA\_RESTART, sa\_restorer=0x7fefe2343520}, {sa\_handler=SIG\_DFL, sa\_mask=[], sa\_flags=0}, 8) = 0

[pid 4208] mprotect(0x7fded8bcb000, 16384, PROT\_READ) = 0

[pid 4208] mprotect(0x55c86c89b000, 4096, PROT\_READ) = 0

[pid 4208] mprotect(0x7fded8c1d000, 8192, PROT\_READ) = 0

[pid 4208] prlimit64(0, RLIMIT\_STACK, NULL, {rlim\_cur=8192\*1024, rlim\_max=RLIM64\_INFINITY}) = 0

[pid 4208] munmap(0x7fded8bde000, 18151) = 0

[pid 4208] mmap(NULL, 2000, PROT\_READ|PROT\_WRITE, MAP\_SHARED, 5, 0) = 0x7fded8c1c000

[pid 4208] rt\_sigaction(SIGUSR1, {sa\_handler=0x55c86c899229, sa\_mask=[USR1], sa\_flags=SA\_RESTORER|SA\_RESTART, sa\_restorer=0x7fded89f8520}, {sa\_handler=SIG\_DFL, sa\_mask=[], sa\_flags=0}, 8) = 0

[pid 4208] rt\_sigaction(SIGUSR2, {sa\_handler=0x55c86c899339, sa\_mask=[USR2], sa\_flags=SA\_RESTORER|SA\_RESTART, sa\_restorer=0x7fded89f8520}, {sa\_handler=SIG\_DFL, sa\_mask=[], sa\_flags=0}, 8) = 0

qwertyuuutrttt

[pid 4189] <... read resumed>"qwertyuuutrttt\n", 1024) = 15

[pid 4189] msync(0x7f9a0983c000, 2000, MS\_SYNC|MS\_INVALIDATE) = 0

[pid 4189] kill(4208, SIGUSR1) = 0

[pid 4208] --- SIGUSR1 {si\_signo=SIGUSR1, si\_code=SI\_USER, si\_pid=4189, si\_uid=1000} ---

[pid 4189] read(0, <unfinished ...>

[pid 4208] write(1, "q", 1) = 1

[pid 4208] write(1, "w", 1) = 1

[pid 4208] write(1, "r", 1) = 1

[pid 4208] write(1, "t", 1) = 1

[pid 4208] write(1, "t", 1) = 1

[pid 4208] write(1, "r", 1) = 1

[pid 4208] write(1, "t", 1) = 1

[pid 4208] write(1, "t", 1) = 1

[pid 4208] write(1, "t", 1) = 1

[pid 4208] write(1, "\n", 1) = 1

[pid 4208] rt\_sigreturn({mask=[]}) = 0

ddkkkdkoooi

[pid 4189] <... read resumed>"ddkkkdkoooi\n", 1024) = 12

[pid 4189] msync(0x7f9a09802000, 2000, MS\_SYNC|MS\_INVALIDATE) = 0

[pid 4189] kill(4209, SIGUSR1) = 0

[pid 4209] --- SIGUSR1 {si\_signo=SIGUSR1, si\_code=SI\_USER, si\_pid=4189, si\_uid=1000} ---

[pid 4189] read(0, <unfinished ...>

[pid 4209] write(1, "d", 1) = 1

[pid 4209] write(1, "d", 1) = 1

[pid 4209] write(1, "k", 1) = 1

[pid 4209] write(1, "k", 1) = 1

[pid 4209] write(1, "k", 1) = 1

[pid 4209] write(1, "d", 1) = 1

[pid 4209] write(1, "k", 1) = 1

[pid 4209] write(1, "\n", 1) = 1

[pid 4209] rt\_sigreturn({mask=[]}) = 0

wertdffooi

[pid 4189] <... read resumed>"wertdffooi\n", 1024) = 11

[pid 4189] msync(0x7f9a0983c000, 2000, MS\_SYNC|MS\_INVALIDATE) = 0

[pid 4189] kill(4208, SIGUSR1) = 0

[pid 4208] --- SIGUSR1 {si\_signo=SIGUSR1, si\_code=SI\_USER, si\_pid=4189, si\_uid=1000} ---

[pid 4189] read(0, <unfinished ...>

[pid 4208] write(1, "w", 1) = 1

[pid 4208] write(1, "r", 1) = 1

[pid 4208] write(1, "t", 1) = 1

[pid 4208] write(1, "d", 1) = 1

[pid 4208] write(1, "f", 1) = 1

[pid 4208] write(1, "f", 1) = 1

[pid 4208] write(1, "\n", 1) = 1

[pid 4208] rt\_sigreturn({mask=[]}) = 0

qwerrteeeaannnnn

[pid 4189] <... read resumed>"qwerrteeeaannnnn\n", 1024) = 17

[pid 4189] msync(0x7f9a09802000, 2000, MS\_SYNC|MS\_INVALIDATE) = 0

[pid 4189] kill(4209, SIGUSR1) = 0

[pid 4209] --- SIGUSR1 {si\_signo=SIGUSR1, si\_code=SI\_USER, si\_pid=4189, si\_uid=1000} ---

[pid 4189] read(0, <unfinished ...>

[pid 4209] write(1, "q", 1) = 1

[pid 4209] write(1, "w", 1) = 1

[pid 4209] write(1, "r", 1) = 1

[pid 4209] write(1, "r", 1) = 1

[pid 4209] write(1, "t", 1) = 1

[pid 4209] write(1, "n", 1) = 1

[pid 4209] write(1, "n", 1) = 1

[pid 4209] write(1, "n", 1) = 1

[pid 4209] write(1, "n", 1) = 1

[pid 4209] write(1, "n", 1) = 1

[pid 4209] write(1, "\n", 1) = 1

[pid 4209] rt\_sigreturn({mask=[]}) = 0

[pid 4189] <... read resumed>"", 1024) = 0

[pid 4189] kill(4208, SIGUSR2) = 0

[pid 4208] --- SIGUSR2 {si\_signo=SIGUSR2, si\_code=SI\_USER, si\_pid=4189, si\_uid=1000} ---

[pid 4189] kill(4209, SIGUSR2) = 0

[pid 4209] --- SIGUSR2 {si\_signo=SIGUSR2, si\_code=SI\_USER, si\_pid=4189, si\_uid=1000} ---

[pid 4208] exit\_group(0 <unfinished ...>

[pid 4189] unlink("first\_mmf.txt" <unfinished ...>

[pid 4209] exit\_group(0 <unfinished ...>

[pid 4208] <... exit\_group resumed>) = ?

[pid 4209] <... exit\_group resumed>) = ?

[pid 4208] +++ exited with 0 +++

[pid 4209] +++ exited with 0 +++

<... unlink resumed>) = 0

--- SIGCHLD {si\_signo=SIGCHLD, si\_code=CLD\_EXITED, si\_pid=4208, si\_uid=1000, si\_status=0, si\_utime=2508, si\_stime=1} ---

unlink("second\_mmf.txt") = 0

exit\_group(0) = ?

+++ exited with 0 +++

**Лабораторная 4:**

$ strace -f ./prog2

execve("./prog2", ["./prog2"], 0x7fff103ee6b8 /\* 36 vars \*/) = 0

brk(NULL) = 0x565108878000

arch\_prctl(0x3001 /\* ARCH\_??? \*/, 0x7ffe4f254490) = -1 EINVAL (Invalid

argument)

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE,

MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f829e9fd000

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

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

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=19839, ...},

AT\_EMPTY\_PATH) = 0

mmap(NULL, 19839, PROT\_READ, MAP\_PRIVATE, 3, 0) = 0x7f829e9f8000

close(3) = 0

openat(AT\_FDCWD, "/lib/x86\_64-linux-gnu/libc.so.6",

O\_RDONLY|O\_CLOEXEC) = 3

read(3, "\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0P\237\2\0\0\0\0\0"..., 832) =

832

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

pread64(3, "\4\0\0\0 \0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0"..., 48,

848) = 48

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0

=\340\2563\265?\356\25x\261\27\313A#\350"..., 68, 896) = 68

newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=2216304, ...},

AT\_EMPTY\_PATH) = 0

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

mmap(NULL, 2260560, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3,

0) = 0x7f829e7d0000

mmap(0x7f829e7f8000, 1658880, PROT\_READ|PROT\_EXEC,

MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x28000) =

0x7f829e7f8000

mmap(0x7f829e98d000, 360448, PROT\_READ,

MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1bd000) =

0x7f829e98d000

mmap(0x7f829e9e5000, 24576, PROT\_READ|PROT\_WRITE,

MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x214000) =

0x7f829e9e5000

mmap(0x7f829e9eb000, 52816, PROT\_READ|PROT\_WRITE,

MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7f829e9eb000

close(3) = 0

mmap(NULL, 12288, PROT\_READ|PROT\_WRITE,

MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f829e7cd000

arch\_prctl(ARCH\_SET\_FS, 0x7f829e7cd740) = 0

set\_tid\_address(0x7f829e7cda10) = 108265

set\_robust\_list(0x7f829e7cda20, 24) = 0

rseq(0x7f829e7ce0e0, 0x20, 0, 0x53053053) = 0

mprotect(0x7f829e9e5000, 16384, PROT\_READ) = 0

mprotect(0x565107daa000, 4096, PROT\_READ) = 0

mprotect(0x7f829ea37000, 8192, PROT\_READ) = 0

prlimit64(0, RLIMIT\_STACK, NULL, {rlim\_cur=8192\*1024,

rlim\_max=RLIM64\_INFINITY}) = 0

munmap(0x7f829e9f8000, 19839) = 0

getrandom("\x40\x08\xe2\x92\x3d\x67\x14\x0e", 8, GRND\_NONBLOCK) = 8

brk(NULL) = 0x565108878000

brk(0x565108899000) = 0x565108899000

openat(AT\_FDCWD, "./lib2/lib2.so", O\_RDONLY|O\_CLOEXEC) = 3

read(3, "\177ELF\2\1\1\0\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0\0\0\0\0\0\0\0\0"..., 832) =

832

newfstatat(3, "", {st\_mode=S\_IFREG|0777, st\_size=15592, ...},

AT\_EMPTY\_PATH) = 0

getcwd("/mnt/c/Users/koche/mai/osi/laba4", 128) = 33

mmap(NULL, 16432, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) =

0x7f829e9f8000

mmap(0x7f829e9f9000, 4096, PROT\_READ|PROT\_EXEC,

MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1000) =

0x7f829e9f9000

mmap(0x7f829e9fa000, 4096, PROT\_READ,

MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x2000) = 0x7f829e9fa000

mmap(0x7f829e9fb000, 8192, PROT\_READ|PROT\_WRITE,

MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x2000) = 0x7f829e9fb000

close(3) = 0

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

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=19839, ...},

AT\_EMPTY\_PATH) = 0

mmap(NULL, 19839, PROT\_READ, MAP\_PRIVATE, 3, 0) = 0x7f829e7c8000

close(3) = 0

openat(AT\_FDCWD, "/lib/x86\_64-linux-gnu/libm.so.6",

O\_RDONLY|O\_CLOEXEC) = 3

read(3, "\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0\0\0\0\0\0\0\0\0"..., 832) =

832

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=940560, ...},

AT\_EMPTY\_PATH) = 0

mmap(NULL, 942344, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0)

= 0x7f829e6e1000

mmap(0x7f829e6ef000, 507904, PROT\_READ|PROT\_EXEC,

MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0xe000) = 0x7f829e6ef000

mmap(0x7f829e76b000, 372736, PROT\_READ,

MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x8a000) =

0x7f829e76b000

mmap(0x7f829e7c6000, 8192, PROT\_READ|PROT\_WRITE,

MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0xe4000) =

0x7f829e7c6000

close(3) = 0

mprotect(0x7f829e7c6000, 4096, PROT\_READ) = 0

mprotect(0x7f829e9fb000, 4096, PROT\_READ) = 0

munmap(0x7f829e7c8000, 19839) = 0

newfstatat(0, "", {st\_mode=S\_IFCHR|0620, st\_rdev=makedev(0x88, 0x4), ...},

AT\_EMPTY\_PATH) = 0

read(0, 1 2 2.5

"1 2 2.5\n", 1024) = 8

newfstatat(1, "", {st\_mode=S\_IFCHR|0620, st\_rdev=makedev(0x88, 0x4), ...},

AT\_EMPTY\_PATH) = 0

write(1, "Result: -0.099621\n", 18Result: -0.099621

) = 18

read(0, 2 2 2.5

"2 2 2.5\n", 1024) = 8

write(1, "Result: 2.500000\n", 17Result: 2.500000

) = 17

read(0, 0

"0\n", 1024) = 2

openat(AT\_FDCWD, "./lib1/lib1.so", O\_RDONLY|O\_CLOEXEC) = 3

read(3, "\177ELF\2\1\1\0\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0\0\0\0\0\0\0\0\0"..., 832) =

832

newfstatat(3, "", {st\_mode=S\_IFREG|0777, st\_size=15520, ...},

AT\_EMPTY\_PATH) = 0

getcwd("/mnt/c/Users/koche/mai/osi/laba4", 128) = 33

mmap(NULL, 16432, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) =

0x7f829e7c8000

mmap(0x7f829e7c9000, 4096, PROT\_READ|PROT\_EXEC,

MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1000) = 0x7f829e7c9000

mmap(0x7f829e7ca000, 4096, PROT\_READ,

MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x2000) = 0x7f829e7ca000

mmap(0x7f829e7cb000, 8192, PROT\_READ|PROT\_WRITE,

MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x2000) = 0x7f829e7cb000

close(3) = 0

mprotect(0x7f829e7cb000, 4096, PROT\_READ) = 0

read(0, 1 2 2.5

"1 2 2.5\n", 1024) = 8

write(1, "Result: -0.754731\n", 18Result: -0.754731

) = 18

read(0, 2 2 2.5

"2 2 2.5\n", 1024) = 8

write(1, "Result: 5.000000\n", 17Result: 5.000000

) = 17

read(0, "", 1024) = 0

munmap(0x7f829e7c8000, 16432) = 0

exit\_group(0) = ?

+++ exited with 0 +++

$ strace -f ./prog1

execve("./prog1", ["./prog1"], 0x7ffe6af64358 /\* 36 vars \*/) = 0

brk(NULL) = 0x564212edf000

arch\_prctl(0x3001 /\* ARCH\_??? \*/, 0x7ffd14a10420) = -1 EINVAL (Invalid

argument)

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE,

MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f92bab92000

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

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

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=19839, ...},

AT\_EMPTY\_PATH) = 0

mmap(NULL, 19839, PROT\_READ, MAP\_PRIVATE, 3, 0) = 0x7f92bab8d000

close(3) = 0

openat(AT\_FDCWD, "/lib/x86\_64-linux-gnu/libm.so.6",

O\_RDONLY|O\_CLOEXEC) = 3

read(3, "\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0\0\0\0\0\0\0\0\0"..., 832) =

832

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=940560, ...},

AT\_EMPTY\_PATH) = 0

mmap(NULL, 942344, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0)

= 0x7f92baaa6000

mmap(0x7f92baab4000, 507904, PROT\_READ|PROT\_EXEC,

MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0xe000) = 0x7f92baab4000

mmap(0x7f92bab30000, 372736, PROT\_READ,

MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x8a000) =

0x7f92bab30000

mmap(0x7f92bab8b000, 8192, PROT\_READ|PROT\_WRITE,

MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0xe4000) =

0x7f92bab8b000

close(3) = 0

openat(AT\_FDCWD, "/lib/x86\_64-linux-gnu/libc.so.6",

O\_RDONLY|O\_CLOEXEC) = 3

read(3, "\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0P\237\2\0\0\0\0\0"..., 832) =

832

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

pread64(3, "\4\0\0\0 \0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0"..., 48,

848) = 48

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0

=\340\2563\265?\356\25x\261\27\313A#\350"..., 68, 896) = 68

newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=2216304, ...},

AT\_EMPTY\_PATH) = 0

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

mmap(NULL, 2260560, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3,

0) = 0x7f92ba87e000

mmap(0x7f92ba8a6000, 1658880, PROT\_READ|PROT\_EXEC,

MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x28000) =

0x7f92ba8a6000

mmap(0x7f92baa3b000, 360448, PROT\_READ,

MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1bd000) =

0x7f92baa3b000

mmap(0x7f92baa93000, 24576, PROT\_READ|PROT\_WRITE,

MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x214000) =

0x7f92baa93000

mmap(0x7f92baa99000, 52816, PROT\_READ|PROT\_WRITE

, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7f92baa99000

close(3) = 0

mmap(NULL, 12288, PROT\_READ|PROT\_WRITE,

MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f92ba87b000

arch\_prctl(ARCH\_SET\_FS, 0x7f92ba87b740) = 0

set\_tid\_address(0x7f92ba87ba10) = 108406

set\_robust\_list(0x7f92ba87ba20, 24) = 0

rseq(0x7f92ba87c0e0, 0x20, 0, 0x53053053) = 0

mprotect(0x7f92baa93000, 16384, PROT\_READ) = 0

mprotect(0x7f92bab8b000, 4096, PROT\_READ) = 0

mprotect(0x56421163c000, 4096, PROT\_READ) = 0

mprotect(0x7f92babcc000, 8192, PROT\_READ) = 0

prlimit64(0, RLIMIT\_STACK, NULL, {rlim\_cur=8192\*1024,

rlim\_max=RLIM64\_INFINITY}) = 0

munmap(0x7f92bab8d000, 19839) = 0

newfstatat(0, "", {st\_mode=S\_IFCHR|0620, st\_rdev=makedev(0x88, 0x4), ...},

AT\_EMPTY\_PATH) = 0

getrandom("\xd5\xec\x99\x01\xfe\xdd\xdb\x75", 8, GRND\_NONBLOCK) = 8

brk(NULL) = 0x564212edf000

brk(0x564212f00000) = 0x564212f00000

read(0, 1 2 2.5

"1 2 2.5\n", 1024) = 8

newfstatat(1, "", {st\_mode=S\_IFCHR|0620, st\_rdev=makedev(0x88, 0x4), ...},

AT\_EMPTY\_PATH) = 0

write(1, "Result: -0.754731\n", 18Result: -0.754731

) = 18

read(0, 2 2 2.5

"2 2 2.5\n", 1024) = 8

write(1, "Result: 5.000000\n", 17Result: 5.000000

) = 17

read(0, "", 1024) = 0

exit\_group(0) = ?

+++ exited with 0 +++

**Лабораторная 5-7:**

Часть Strace, полный в strace8.txt:

$ strace -f ./server

execve("./server", ["./server"], 0x7fff026f4d78 /\* 36 vars \*/) = 0

brk(NULL) = 0x56242bd13000

arch\_prctl(0x3001 /\* ARCH\_??? \*/, 0x7ffe646ffdc0) = -1 EINVAL (Invalid argument)

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7ff096387000

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

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

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=19839, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 19839, PROT\_READ, MAP\_PRIVATE, 3, 0) = 0x7ff096382000

close(3) = 0

openat(AT\_FDCWD, "/lib/x86\_64-linux-gnu/libzmq.so.5", O\_RDONLY|O\_CLOEXEC) = 3

read(3, "\177ELF\2\1\1\0\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0\240\233\1\0\0\0\0\0"..., 832) = 832

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=634936, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 636784, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7ff0962e6000

mmap(0x7ff0962fe000, 397312, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x18000) = 0x7ff0962fe000

mmap(0x7ff09635f000, 106496, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x79000) = 0x7ff09635f000

mmap(0x7ff096379000, 36864, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x92000) = 0x7ff096379000

close(3) = 0

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

read(3, "\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0P\237\2\0\0\0\0\0"..., 832) = 832

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

pread64(3, "\4\0\0\0 \0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0"..., 48, 848) = 48

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0 =\340\2563\265?\356\25x\261\27\313A#\350"..., 68, 896) = 68

newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=2216304, ...}, AT\_EMPTY\_PATH) = 0

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

mmap(NULL, 2260560, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7ff0960be000

mmap(0x7ff0960e6000, 1658880, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x28000) = 0x7ff0960e6000

mmap(0x7ff09627b000, 360448, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1bd000) = 0x7ff09627b000

mmap(0x7ff0962d3000, 24576, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x214000) = 0x7ff0962d3000

mmap(0x7ff0962d9000, 52816, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7ff0962d9000

close(3) = 0

openat(AT\_FDCWD, "/lib/x86\_64-linux-gnu/libbsd.so.0", O\_RDONLY|O\_CLOEXEC) = 3

read(3, "\177ELF\2\1\1\0\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0\0\0\0\0\0\0\0\0"..., 832) = 832

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=89096, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 94432, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7ff0960a6000

mprotect(0x7ff0960aa000, 69632, PROT\_NONE) = 0

mmap(0x7ff0960aa000, 53248, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x4000) = 0x7ff0960aa000

mmap(0x7ff0960b7000, 12288, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x11000) = 0x7ff0960b7000

mmap(0x7ff0960bb000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x14000) = 0x7ff0960bb000

mmap(0x7ff0960bd000, 224, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7ff0960bd000

close(3) = 0

openat(AT\_FDCWD, "/lib/x86\_64-linux-gnu/libsodium.so.23", O\_RDONLY|O\_CLOEXEC) = 3

read(3, "\177ELF\2\1\1\0\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0\0\0\0\0\0\0\0\0"..., 832) = 832

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=355040, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 357440, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7ff09604e000

mprotect(0x7ff09605a000, 303104, PROT\_NONE) = 0

mmap(0x7ff09605a000, 229376, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0xc000) = 0x7ff09605a000

mmap(0x7ff096092000, 69632, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x44000) = 0x7ff096092000

mmap(0x7ff0960a4000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x55000) = 0x7ff0960a4000

close(3) = 0

openat(AT\_FDCWD, "/lib/x86\_64-linux-gnu/libpgm-5.3.so.0", O\_RDONLY|O\_CLOEXEC) = 3

read(3, "\177ELF\2\1\1\0\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0\340L\0\0\0\0\0\0"..., 832) = 832

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=310264, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 329808, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7ff095ffd000

mmap(0x7ff096001000, 172032, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x4000) = 0x7ff096001000

mmap(0x7ff09602b000, 118784, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x2e000) = 0x7ff09602b000

mmap(0x7ff096048000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x4a000) = 0x7ff096048000

mmap(0x7ff09604a000, 14416, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7ff09604a000

close(3) = 0

openat(AT\_FDCWD, "/lib/x86\_64-linux-gnu/libnorm.so.1", O\_RDONLY|O\_CLOEXEC) = 3

read(3, "\177ELF\2\1\1\0\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0 \255\0\0\0\0\0\0"..., 832) = 832

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=497824, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7ff095ffb000

mmap(NULL, 1223168, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7ff095ed0000

mprotect(0x7ff095eda000, 446464, PROT\_NONE) = 0

mmap(0x7ff095eda000, 286720, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0xa000) = 0x7ff095eda000

mmap(0x7ff095f20000, 155648, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x50000) = 0x7ff095f20000

mmap(0x7ff095f47000, 16384, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x76000) = 0x7ff095f47000

mmap(0x7ff095f4b000, 719360, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7ff095f4b000

close(3) = 0

openat(AT\_FDCWD, "/lib/x86\_64-linux-gnu/libgssapi\_krb5.so.2", O\_RDONLY|O\_CLOEXEC) = 3

read(3, "\177ELF\2\1\1\0\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0\0\0\0\0\0\0\0\0"..., 832) = 832

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=338648, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 340960, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7ff095e7c000

mprotect(0x7ff095e87000, 282624, PROT\_NONE) = 0

mmap(0x7ff095e87000, 229376, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0xb000) = 0x7ff095e87000

mmap(0x7ff095ebf000, 49152, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x43000) = 0x7ff095ebf000

mmap(0x7ff095ecc000, 16384, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x4f000) = 0x7ff095ecc000

close(3) = 0

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

read(3, "\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0\0\0\0\0\0\0\0\0"..., 832) = 832

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=2260296, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 2275520, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7ff095c50000

mprotect(0x7ff095cea000, 1576960, PROT\_NONE) = 0

mmap(0x7ff095cea000, 1118208, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x9a000) = 0x7ff095cea000

mmap(0x7ff095dfb000, 454656, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1ab000) = 0x7ff095dfb000

mmap(0x7ff095e6b000, 57344, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x21a000) = 0x7ff095e6b000

mmap(0x7ff095e79000, 10432, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7ff095e79000

close(3) = 0

openat(AT\_FDCWD, "/lib/x86\_64-linux-gnu/libgcc\_s.so.1", O\_RDONLY|O\_CLOEXEC) = 3

read(3, "\177ELF\2\1\1\0\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0\0\0\0\0\0\0\0\0"..., 832) = 832

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=125488, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 127720, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7ff095c30000

mmap(0x7ff095c33000, 94208, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x3000) = 0x7ff095c33000

mmap(0x7ff095c4a000, 16384, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1a000) = 0x7ff095c4a000

mmap(0x7ff095c4e000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1d000) = 0x7ff095c4e000

close(3) = 0

…

[pid 106407] rseq(0x7ff095201fe0, 0x20, 0, 0x53053053 <unfinished ...>

[pid 106405] rt\_sigprocmask(SIG\_SETMASK, [], NULL, 8) = 0

[pid 106407] <... rseq resumed>) = 0

[pid 106405] eventfd2(0, EFD\_CLOEXEC <unfinished ...>

[pid 106407] set\_robust\_list(0x7ff095201920, 24 <unfinished ...>

[pid 106405] <... eventfd2 resumed>) = 8

[pid 106407] <... set\_robust\_list resumed>) = 0

[pid 106405] fcntl(8, F\_GETFL <unfinished ...>

[pid 106407] rt\_sigprocmask(SIG\_SETMASK, [], <unfinished ...>

[pid 106405] <... fcntl resumed>) = 0x2 (flags O\_RDWR)

[pid 106407] <... rt\_sigprocmask resumed>NULL, 8) = 0

[pid 106405] fcntl(8, F\_SETFL, O\_RDWR|O\_NONBLOCK <unfinished ...>

[pid 106407] rt\_sigprocmask(SIG\_BLOCK, ~[RTMIN RT\_1], <unfinished ...>

[pid 106405] <... fcntl resumed>) = 0

[pid 106407] <... rt\_sigprocmask resumed>NULL, 8) = 0

[pid 106405] fcntl(8, F\_GETFL <unfinished ...>

[pid 106407] sched\_getparam(106407, <unfinished ...>

[pid 106405] <... fcntl resumed>) = 0x802 (flags O\_RDWR|O\_NONBLOCK)

[pid 106407] <... sched\_getparam resumed>[0]) = 0

[pid 106405] fcntl(8, F\_SETFL, O\_RDWR|O\_NONBLOCK <unfinished ...>

[pid 106407] sched\_getscheduler(106407 <unfinished ...>

[pid 106405] <... fcntl resumed>) = 0

[pid 106407] <... sched\_getscheduler resumed>) = 0 (SCHED\_OTHER)

[pid 106405] getpid( <unfinished ...>

[pid 106407] sched\_setscheduler(106407, SCHED\_OTHER, [0] <unfinished ...>

[pid 106405] <... getpid resumed>) = 106405

[pid 106407] <... sched\_setscheduler resumed>) = 0

[pid 106405] getpid() = 106405

[pid 106407] prctl(PR\_SET\_NAME, "ZMQbg/IO/0" <unfinished ...>

[pid 106405] poll([{fd=8, events=POLLIN}], 1, 0 <unfinished ...>

[pid 106407] <... prctl resumed>) = 0

[pid 106405] <... poll resumed>) = 0 (Timeout)

[pid 106405] socket(AF\_NETLINK, SOCK\_RAW|SOCK\_CLOEXEC, NETLINK\_ROUTE) = 9

[pid 106405] bind(9, {sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, 12) = 0

[pid 106407] epoll\_wait(7, <unfinished ...>

[pid 106405] getsockname(9, {sa\_family=AF\_NETLINK, nl\_pid=106405, nl\_groups=00000000}, [12]) = 0

[pid 106405] sendto(9, [{nlmsg\_len=20, nlmsg\_type=RTM\_GETLINK, nlmsg\_flags=NLM\_F\_REQUEST|NLM\_F\_DUMP, nlmsg\_seq=1702686593, nlmsg\_pid=0}, {ifi\_family=AF\_UNSPEC, ...}], 20, 0, {sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, 12) = 20

[pid 106405] recvmsg(9, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base=[[{nlmsg\_len=1336, nlmsg\_type=RTM\_NEWLINK, nlmsg\_flags=NLM\_F\_MULTI, nlmsg\_seq=1702686593, nlmsg\_pid=106405}, {ifi\_family=AF\_UNSPEC, ifi\_type=ARPHRD\_LOOPBACK, ifi\_index=if\_nametoindex("lo"), ifi\_flags=IFF\_UP|IFF\_LOOPBACK|IFF\_RUNNING|IFF\_LOWER\_UP, ifi\_change=0}, [[{nla\_len=7, nla\_type=IFLA\_IFNAME}, "lo"], [{nla\_len=8, nla\_type=IFLA\_TXQLEN}, 1000], type=NLMSG\_DONE, nlmsg\_flags=NLM\_F\_MULTI, nlmsg\_seq=1702686594, nlmsg\_pid=106405}, 0], iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 20

[pid 106405] close(9) = 0

[pid 106405] socket(AF\_INET, SOCK\_STREAM|SOCK\_CLOEXEC, IPPROTO\_TCP) = 9

[pid 106405] setsockopt(9, SOL\_SOCKET, SO\_REUSEADDR, [1], 4) = 0

[pid 106405] bind(9, {sa\_family=AF\_INET, sin\_port=htons(5555), sin\_addr=inet\_addr("127.0.0.1")}, 16) = 0

[pid 106405] listen(9, 100) = 0

[pid 106405] getsockname(9, {sa\_family=AF\_INET, sin\_port=htons(5555), sin\_addr=inet\_addr("127.0.0.1")}, [128 => 16]) = 0

[pid 106405] getsockname(9, {sa\_family=AF\_INET, sin\_port=htons(5555), sin\_addr=inet\_addr("127.0.0.1")}, [128 => 16]) = 0

[pid 106405] getpid() = 106405

[pid 106405] write(6, "\1\0\0\0\0\0\0\0", 8) = 8

[pid 106407] <... epoll\_wait resumed>[{events=EPOLLIN, data={u32=735224416, u64=94713354035808}}], 256, -1) = 1

[pid 106405] getpid( <unfinished ...>

[pid 106407] getpid( <unfinished ...>

[pid 106405] <... getpid resumed>) = 106405

[pid 106407] <... getpid resumed>) = 106405

[pid 106405] write(8, "\1\0\0\0\0\0\0\0", 8 <unfinished ...>

[pid 106407] poll([{fd=6, events=POLLIN}], 1, 0 <unfinished ...>

[pid 106405] <... write resumed>) = 8

[pid 106407] <... poll resumed>) = 1 ([{fd=6, revents=POLLIN}])

[pid 106407] getpid() = 106405

[pid 106407] read(6, "\1\0\0\0\0\0\0\0", 8) = 8

[pid 106405] newfstatat(0, "", <unfinished ...>

[pid 106407] mmap(NULL, 134217728, PROT\_NONE, MAP\_PRIVATE|MAP\_ANONYMOUS|MAP\_NORESERVE, -1, 0 <unfinished ...>

[pid 106405] <... newfstatat resumed>{st\_mode=S\_IFCHR|0620, st\_rdev=makedev(0x88, 0x4), ...}, AT\_EMPTY\_PATH) = 0

[pid 106407] <... mmap resumed>) = 0x7ff08ca01000

[pid 106405] read(0, <unfinished ...>

[pid 106407] munmap(0x7ff08ca01000, 56619008) = 0

[pid 106407] munmap(0x7ff094000000, 10489856) = 0

[pid 106407] mprotect(0x7ff090000000, 135168, PROT\_READ|PROT\_WRITE) = 0

[pid 106407] epoll\_ctl(7, EPOLL\_CTL\_ADD, 9, {events=0, data={u32=2415922032, u64=140671184800624}}) = 0

[pid 106407] epoll\_ctl(7, EPOLL\_CTL\_MOD, 9, {events=EPOLLIN, data={u32=2415922032, u64=140671184800624}}) = 0

[pid 106407] getpid() = 106405

[pid 106407] poll([{fd=6, events=POLLIN}], 1, 0) = 0 (Timeout)

[pid 106407] epoll\_wait(7, create 2 -1

<unfinished ...>

…

[pid 106405] <... read resumed>"create 2 -1\n", 1024) = 12

[pid 106405] clone(child\_stack=NULL, sin\_addr=inet\_addr("127.0.0.1")}, [128 => 16]) = 0

[pid 106627] epoll\_ctl(7, EPOLL\_CTL\_DEL, 9, 0x7f2ba8001434 <unfinished ...>

[pid 106407] fcntl(11, F\_GETFL <unfinished ...>

[pid 106627] <... epoll\_ctl resumed>) = 0

[pid 106407] <... fcntl resumed>) = 0x2 (flags O\_RDWR)

[pid 106627] getsockopt(9, SOL\_SOCKET, SO\_ERROR, <unfinished ...>

[pid 106407] fcntl(11, F\_SETFL, O\_RDWR|O\_NONBLOCK <unfinished ...>

[pid 106627] <... getsockopt resumed>[0], [4]) = 0

[pid 106407] <... fcntl resumed>) = 0

[pid 106627] setsockopt(9, SOL\_TCP, TCP\_NODELAY, [1], 4 <unfinished ...>

[pid 106407] getpid( <unfinished ...>

[pid 106627] <... setsockopt resumed>) = 0

[pid 106407] <... getpid resumed>) = 106405

[pid 106627] getsockname(9, <unfinished ...>

[pid 106407] write(6, "\1\0\0\0\0\0\0\0", 8 <unfinished ...>

[pid 106627] <... getsockname resumed>{sa\_family=AF\_INET, sin\_port=htons(59230), sin\_addr=inet\_addr("127.0.0.1")}, [128 => 16]) = 0

[pid 106407] <... write resumed>) = 8

[pid 106627] getpeername(9, <unfinished ...>

[pid 106407] epoll\_wait(7, <unfinished ...>

[pid 106627] <... getpeername resumed>{sa\_family=AF\_INET, sin\_port=htons(5555), sin\_addr=inet\_addr("127.0.0.1")}, [128 => 16]) = 0

[pid 106407] <... epoll\_wait resumed>[{events=EPOLLIN, data={u32=735224416, u64=94713354035808}}], 256, -1) = 1

[pid 106627] fcntl(9, F\_GETFL <unfinished ...>

[pid 106407] getpid( <unfinished ...>

[pid 106627] <... fcntl resumed>) = 0x802 (flags O\_RDWR|O\_NONBLOCK)

[pid 106407] <... getpid resumed>) = 106405

[pid 106627] fcntl(9, F\_SETFL, O\_RDWR|O\_NONBLOCK <unfinished ...>

[pid 106407] poll([{fd=6, events=POLLIN}], 1, 0 <unfinished ...>

[pid 106627] <... fcntl resumed>) = 0

[pid 106407] <... poll resumed>) = 1 ([{fd=6, revents=POLLIN}])

data={u32=2415988864, u64=140671184867456}} <unfinished ...>

[pid 106627] <... sendto resumed>) = 27

[pid 106407] <... epoll\_ctl resumed>) = 0

[pid 106627] epoll\_wait(7, <unfinished ...>

[pid 106407] recvfrom(11, <unfinished ...>

[pid 106627] <... epoll\_wait resumed>[{events=EPOLLOUT, data={u32=2818577456, u64=139825478898736}}], 256, 29996) = 1

[pid 106407] <... recvfrom resumed>"\4\31\5READY\vSocket-Type\0\0\0\3SUB", 8192, 0, NULL, NULL) = 27

[pid 106407] epoll\_wait(7, [{events=EPOLLOUT, data={u32=2415988864, u64=140671184867456}}], 256, 29993) = 1

[pid 106407] mprotect(0x7ff090021000, 4096, PROT\_READ|PROT\_WRITE) = 0

[pid 106407] getpid() = 106405

[pid 106407] write(8, "\1\0\0\0\0\0\0\0", 8) = 8

[pid 106407] sendto(11, "\4\31\5READY\vSocket-Type\0\0\0\3PUB", 27, 0, NULL, 0) = 27

[pid 106407] epoll\_wait(7, [{events=EPOLLOUT, data={u32=2415988864, u64=140671184867456}}], 256, -1) = 1

[pid 106407] epoll\_ctl(7, EPOLL\_CTL\_MOD, 11, {events=EPOLLIN, data={u32=2415988864, u64=140671184867456}}) = 0

[pid 106407] epoll\_wait(7, <unfinished ...>

[pid 106627] epoll\_ctl(7, EPOLL\_CTL\_MOD, 9, {events=EPOLLIN, data={u32=2818577456, u64=139825478898736}}) = 0

[pid 106627] epoll\_wait(7, [{events=EPOLLIN, data={u32=2818577456, u64=139825478898736}}], 256, 29990) = 1

[pid 106627] recvfrom(9, "\4\31\5READY\vSocket-Type\0\0\0\3PUB", 8192, 0, NULL, NULL) = 27

[pid 106627] epoll\_ctl(7, EPOLL\_CTL\_MOD, 9, {events=EPOLLIN|EPOLLOUT, data={u32=2818577456, u64=139825478898736}}) = 0

[pid 106627] sendto(9, "\4\n\tSUBSCRIBE", 12, 0, NULL, 0) = 12

[pid 106407] <... epoll\_wait resumed>[{events=EPOLLIN, data={u32=2415988864, u64=140671184867456}}], 256, -1) = 1

[pid 106627] epoll\_wait(7, <unfinished ...>

[pid 106407] recvfrom(11, <unfinished ...>

[pid 106627] <... epoll\_wait resumed>[{events=EPOLLOUT, data={u32=2818577456, u64=139825478898736}}], 256, -1) = 1

[pid 106407] <... recvfrom resumed>"\4\n\tSUBSCRIBE", 8192, 0, NULL, NULL) = 12

[pid 106627] epoll\_ctl(7, EPOLL\_CTL\_MOD, 9, {events=EPOLLIN, data={u32=2818577456, u64=139825478898736}} <unfinished ...>

[pid 106407] epoll\_wait(7, <unfinished ...>

[pid 106627] <... epoll\_ctl resumed>) = 0

[pid 106405] read(0, exec 3 2 6 7

"exec 3 2 6 7\n", 1024) = 13

[pid 106405] getpid() = 106405

[pid 106405] poll([{fd=8, events=POLLIN}], 1, 0) = 1 ([{fd=8, revents=POLLIN}])

[pid 106405] getpid() = 106405

[pid 106405] read(8, "\1\0\0\0\0\0\0\0", 8) = 8

[pid 106405] getpid() = 106405

[pid 106405] poll([{fd=8, events=POLLIN}], 1, 0) = 0 (Timeout)

[pid 106405] getpid() = 106405

[pid 106405] write(6, "\1\0\0\0\0\0\0\0", 8) = 8

[pid 106407] <... epoll\_wait resumed>[{events=EPOLLIN, data={u32=735224416, u64=94713354035808}}], 256, -1) = 1

[pid 106405] read(0, <unfinished ...>

[pid 106407] getpid() = 106405

[pid 106407] poll([{fd=6, events=POLLIN}], 1, 0) = 1 ([{fd=6, revents=POLLIN}])

[pid 106407] getpid() = 106405

[pid 106407] read(6, "\1\0\0\0\0\0\0\0", 8) = 8

[pid 106407] epoll\_ctl(7, EPOLL\_CTL\_MOD, 10, {events=EPOLLIN|EPOLLOUT, data={u32=2415922128, u64=140671184800720}}) = 0

[pid 106407] sendto(10, "\0\rexec 3 2 6 7\n", 15, 0, NULL, 0 <unfinished ...>

[pid 106476] <... epoll\_wait resumed>[{events=EPOLLIN, data={u32=3623883824, u64=140156996686896}}], 256, -1) = 1

[pid 106407] <... sendto resumed>) = 15

[pid 106476] recvfrom(9, <unfinished ...>

[pid 106407] epoll\_ctl(7, EPOLL\_CTL\_MOD, 11, {events=EPOLLIN|EPOLLOUT, data={u32=2415988864, u64=140671184867456}} <unfinished ...>

[pid 106476] <... recvfrom resumed>"\0\rexec 3 2 6 7\n", 8192, 0, NULL, NULL) = 15

[pid 106407] <... epoll\_ctl resumed>) = 0

[pid 106476] getpid( <unfinished ...>

[pid 106407] sendto(11, "\0\rexec 3 2 6 7\n", 15, 0, NULL, 0 <unfinished ...>

[pid 106476] <... getpid resumed>) = 106474

[pid 106627] <... epoll\_wait resumed>[{events=EPOLLIN, data={u32=2818577456, u64=139825478898736}}], 256, -1) = 1

[pid 106476] write(8, "\1\0\0\0\0\0\0\0", 8 <unfinished ...>

[pid 106407] <... sendto resumed>) = 15

[pid 106627] recvfrom(9, <unfinished ...>

[pid 106476] <... write resumed>) = 8

[pid 106474] <... poll resumed>) = 1 ([{fd=8, revents=POLLIN}])

[pid 106407] getpid( <unfinished ...>

[pid 106627] <... recvfrom resumed>"\0\rexec 3 2 6 7\n", 8192, 0, NULL, NULL) = 15

[pid 106476] epoll\_wait(7, <unfinished ...>

[pid 106474] getpid( <unfinished ...>

[pid 106627] getpid( <unfinished ...>

[pid 106407] <... getpid resumed>) = 106405

[pid 106627] <... getpid resumed>) = 106625

[pid 106474] <... getpid resumed>) = 106474

[pid 106407] poll([{fd=6, events=POLLIN}], 1, 0 <unfinished ...>

[pid 106627] write(8, "\1\0\0\0\0\0\0\0", 8 <unfinished ...>

[pid 106474] read(8, <unfinished ...>

[pid 106407] <... poll resumed>) = 0 (Timeout)

[pid 106627] <... write resumed>) = 8

[pid 106474] <... read resumed>"\1\0\0\0\0\0\0\0", 8) = 8

[pid 106627] epoll\_wait(7, <unfinished ...>

[pid 106625] <... poll resumed>) = 1 ([{fd=8, revents=POLLIN}])

[pid 106626] epoll\_ctl(5, EPOLL\_CTL\_MOD, 8, {events=EPOLLIN, data={u32=2684357488, u64=139825344678768}} <unfinished ...>

[pid 106475] mmap(NULL, 134217728, PROT\_NONE, MAP\_PRIVATE|MAP\_ANONYMOUS|MAP\_NORESERVE, -1, 0 <unfinished ...>

[pid 106626] <... epoll\_ctl resumed>) = 0

[pid 106475] <... mmap resumed>) = 0x7f78d0000000

[pid 106626] getpid( <unfinished ...>

[pid 106475] munmap(0x7f78d4000000, 67108864 <unfinished ...>

[pid 106626] <... getpid resumed>) = 106625

[pid 106407] <... getpid resumed>) = 106405

[pid 106406] rt\_sigprocmask(SIG\_BLOCK, ~[RT\_1], <unfinished ...>

[pid 106407] poll([{fd=6, events=POLLIN}], 1, 0 <unfinished ...>

[pid 106406] <... rt\_sigprocmask resumed>NULL, 8) = 0

[pid 106407] <... poll resumed>) = 1 ([{fd=6, revents=POLLIN}])

[pid 106406] madvise(0x7ff095202000, 8368128, MADV\_DONTNEED <unfinished ...>

[pid 106407] getpid() = 106405

[pid 106406] <... madvise resumed>) = 0

[pid 106407] read(6, <unfinished ...>

[pid 106406] exit(0 <unfinished ...>

[pid 106407] <... read resumed>"\1\0\0\0\0\0\0\0", 8) = 8

[pid 106406] <... exit resumed>) = ?

[pid 106407] epoll\_ctl(7, EPOLL\_CTL\_DEL, 6, 0x56242bd2a264 <unfinished ...>

[pid 106406] +++ exited with 0 +++

[pid 106407] <... epoll\_ctl resumed>) = 0

[pid 106407] getpid() = 106405

[pid 106407] poll([{fd=6, events=POLLIN}], 1, 0) = 0 (Timeout)

[pid 106407] rt\_sigprocmask(SIG\_BLOCK, ~[RT\_1], NULL, 8) = 0

[pid 106407] madvise(0x7ff094a01000, 8368128, MADV\_DONTNEED) = 0

[pid 106407] exit(0) = ?

[pid 106405] <... futex resumed>) = 0

[pid 106407] +++ exited with 0 +++

close(7) = 0

close(6) = 0

close(5) = 0

close(4) = 0

close(3) = 0

exit\_group(0) = ?

+++ exited with 0 +++

**Вывод**

Strace показывает нам все системные вызовы, которые выполняются программой. Это очень важно для отладки и диагностики программы программистом. Я уверен, что буду использовать его в будущем.