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»

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Оценка: _____

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Цель работы:

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

В Unix-подобных операционных системах, программа общается с системой с помощью системных вызовов. Наш мир не идеален, и даже под капотом нашей программы что-то может пойти не так, чтобы понять, что пошло не так, нужно видеть что происходило и для этого мы используем утилиту -strace, которая выводит историю работы системный вызовов.

Как и у любой утилиты, у неё есть флаги:

-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.

В своих лабораторных работах я в основном использовала только ключ -f.

Код программы

Laba_1:

```
$ strace -f ./main

execve("./main", ["./main"], 0x7ffc0f24bdf8 /* 47 vars */) = 0

brk(NULL)                               = 0x55b32bf86000

arch_prctl(0x3001 /* ARCH_??? */, 0x7ffc66835ff0) = -1 EINVAL (Недопустимый аргумент)

mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fe5370ab000

access("/etc/ld.so.preload", R_OK)      = -1 ENOENT (Нет такого файла или каталога)

openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC) = 3

newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=102171, ...}, AT_EMPTY_PATH) = 0

mmap(NULL, 102171, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7fe537092000

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=2522552, ...}, AT_EMPTY_PATH) = 0

     mmap(NULL, 2535872, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fe536e00000

     mmap(0x7fe536e9c000, 1249280, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x9c000) = 0x7fe536e9c000

     mmap(0x7fe536fcd000, 577536, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x1cd000) = 0x7fe536fcd000

     mmap(0x7fe53705a000, 57344, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x25a000) = 0x7fe53705a000

     mmap(0x7fe537068000, 12736, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x7fe537068000

     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<\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

     newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=2072888, ...}, 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, 2117488, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fe536a00000

     mmap(0x7fe536a22000, 1540096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x22000) = 0x7fe536a22000

     mmap(0x7fe536b9a000, 360448, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x19a000) = 0x7fe536b9a000

     mmap(0x7fe536bf2000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x1f1000) = 0x7fe536bf2000

     mmap(0x7fe536bf8000, 53104, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x7fe536bf8000

     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"..., 832) = 832

     newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=948816, ...}, AT_EMPTY_PATH) = 0

     mmap(NULL, 950520, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fe536d17000

     mmap(0x7fe536d25000, 516096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0xe000) = 0x7fe536d25000

     mmap(0x7fe536da3000, 372736, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x8c000) = 0x7fe536da3000

     mmap(0x7fe536dfe000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0xe6000) = 0x7fe536dfe000
```

```
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\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=141872, ...}, AT_EMPTY_PATH) = 0

mmap(NULL, 144232, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fe53706e000

mmap(0x7fe537071000, 110592, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x3000) = 0x7fe537071000

mmap(0x7fe53708c000, 16384, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1e000)
= 0x7fe53708c000

mmap(0x7fe537090000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x21000) = 0x7fe537090000

close(3)                                = 0

mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fe53706c000

arch_prctl(ARCH_SET_FS, 0x7fe53706d440) = 0

set_tid_address(0x7fe53706d710)         = 48645

set_robust_list(0x7fe53706d720, 24)     = 0

rseq(0x7fe53706dd60, 0x20, 0, 0x53053053) = 0

mprotect(0x7fe536bf2000, 16384, PROT_READ) = 0

mprotect(0x7fe537090000, 4096, PROT_READ) = 0

mprotect(0x7fe536dfe000, 4096, PROT_READ) = 0

mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fe536d15000

mprotect(0x7fe53705a000, 45056, PROT_READ) = 0

mprotect(0x55b32b875000, 4096, PROT_READ) = 0

mprotect(0x7fe5370e0000, 8192, PROT_READ) = 0

prlimit64(0, RLIMIT_STACK, NULL, {rlim_cur=8192*1024, rlim_max=RLIM64_INFINITY}) = 0

munmap(0x7fe537092000, 102171)          = 0

futex(0x7fe5370687fc, FUTEX_WAKE_PRIVATE, 2147483647) = 0

getrandom("\x27\x98\xa4\xa7\x44\x2c\xe7\x1d", 8, GRND_NONBLOCK) = 8

brk(NULL)                               = 0x55b32bf86000

brk(0x55b32bfa7000)                     = 0x55b32bfa7000

pipe2([3, 4], 0)                        = 0

pipe2([5, 6], 0)                        = 0
```

clone(child_stack=NULL, flags=CLONE_CHILD_CLEARTID|CLONE_CHILD_SETTID|SIGCHLD, child_tidptr=0x7fe53706d710) = 48646

strace: Process 48646 attached

[pid 48645] close(3 <unfinished ...>

[pid 48646] set_robust_list(0x7fe53706d720, 24 <unfinished ...>

[pid 48645] <... close resumed>)   = 0

[pid 48646] <... set_robust_list resumed>) = 0

[pid 48645] close(6)   = 0

[pid 48646] close(4 <unfinished ...>

[pid 48645] newfstatat(1, "", <unfinished ...>

[pid 48646] <... close resumed>)   = 0

[pid 48645] <... newfstatat resumed>{st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0), ...}, AT_EMPTY_PATH) = 0

[pid 48646] close(5)   = 0

[pid 48645] write(1, "Enter filename:\n", 16 <unfinished ...>

[pid 48646] dup2(3, 0Enter filename:

 <unfinished ...>

[pid 48645] <... write resumed>)   = 16

[pid 48646] <... dup2 resumed>)   = 0

[pid 48645] newfstatat(0, "", <unfinished ...>

[pid 48646] dup2(6, 1 <unfinished ...>

[pid 48645] <... newfstatat resumed>{st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0), ...}, AT_EMPTY_PATH) = 0

[pid 48646] <... dup2 resumed>)   = 1

[pid 48645] read(0, <unfinished ...>

[pid 48646] execve("./child", ["./child"], 0x7ffc66836158 /* 47 vars */) = 0

[pid 48646] brk(NULL)   = 0x56366dd34000

[pid 48646] arch_prctl(0x3001 /* ARCH_??? */, 0x7ffcb5e76240) = -1 EINVAL (Недопустимый аргумент)

[pid 48646] mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7f0e895b2000

[pid 48646] access("/etc/ld.so.preload", R_OK) = -1 ENOENT (Нет такого файла или каталога)

[pid 48646] openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC) = 4

[pid 48646] newfstatat(4, "", {st_mode=S_IFREG|0644, st_size=102171, ...}, AT_EMPTY_PATH) = 0

```
     [pid 48646] mmap(NULL, 102171, PROT_READ, MAP_PRIVATE, 4, 0) = 0x7f0e89599000

     [pid 48646] close(4)                    = 0

     [pid 48646] openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libstdc++.so.6",
O_RDONLY|O_CLOEXEC) = 4

     [pid 48646] read(4,
"\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

     [pid 48646] newfstatat(4, "", {st_mode=S_IFREG|0644, st_size=2522552, ...},
AT_EMPTY_PATH) = 0

     [pid 48646] mmap(NULL, 2535872, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 4, 0) =
0x7f0e89200000

     [pid 48646] mmap(0x7f0e8929c000, 1249280, PROT_READ|PROT_EXEC,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x9c000) = 0x7f0e8929c000

     [pid 48646] mmap(0x7f0e893cd000, 577536, PROT_READ,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x1cd000) = 0x7f0e893cd000

     [pid 48646] mmap(0x7f0e8945a000, 57344, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x25a000) = 0x7f0e8945a000

     [pid 48646] mmap(0x7f0e89468000, 12736, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7f0e89468000

     [pid 48646] close(4)                    = 0

     [pid 48646] openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libc.so.6", O_RDONLY|O_CLOEXEC) = 4

     [pid 48646] read(4, "\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0P<\2\0\0\0\0\0"...,
832) = 832

     [pid 48646] pread64(4,
"\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 48646] newfstatat(4, "", {st_mode=S_IFREG|0644, st_size=2072888, ...},
AT_EMPTY_PATH) = 0

     [pid 48646] pread64(4,
"\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 48646] mmap(NULL, 2117488, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 4, 0) =
0x7f0e88e00000

     [pid 48646] mmap(0x7f0e88e22000, 1540096, PROT_READ|PROT_EXEC,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x22000) = 0x7f0e88e22000

     [pid 48646] mmap(0x7f0e88f9a000, 360448, PROT_READ,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x19a000) = 0x7f0e88f9a000

     [pid 48646] mmap(0x7f0e88ff2000, 24576, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x1f1000) = 0x7f0e88ff2000

     [pid 48646] mmap(0x7f0e88ff8000, 53104, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7f0e88ff8000

     [pid 48646] close(4)                    = 0

     [pid 48646] openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libm.so.6", O_RDONLY|O_CLOEXEC) = 4
```

```
     [pid 48646] read(4,
"\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"..., 832) = 832

     [pid 48646] newfstatat(4, "", {st_mode=S_IFREG|0644, st_size=948816, ...},
AT_EMPTY_PATH) = 0

     [pid 48646] mmap(NULL, 950520, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 4, 0) =
0x7f0e894b0000

     [pid 48646] mmap(0x7f0e894be000, 516096, PROT_READ|PROT_EXEC,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0xe000) = 0x7f0e894be000

     [pid 48646] mmap(0x7f0e8953c000, 372736, PROT_READ,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x8c000) = 0x7f0e8953c000

     [pid 48646] mmap(0x7f0e89597000, 8192, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0xe6000) = 0x7f0e89597000

     [pid 48646] close(4)                    = 0

     [pid 48646] openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libgcc_s.so.1", O_RDONLY|O_CLOEXEC)
= 4

     [pid 48646] read(4,
"\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"..., 832) = 832

     [pid 48646] newfstatat(4, "", {st_mode=S_IFREG|0644, st_size=141872, ...},
AT_EMPTY_PATH) = 0

     [pid 48646] mmap(NULL, 144232, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 4, 0) =
0x7f0e8948c000

     [pid 48646] mmap(0x7f0e8948f000, 110592, PROT_READ|PROT_EXEC,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x3000) = 0x7f0e8948f000

     [pid 48646] mmap(0x7f0e894aa000, 16384, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
4, 0x1e000) = 0x7f0e894aa000

     [pid 48646] mmap(0x7f0e894ae000, 8192, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x21000) = 0x7f0e894ae000

     [pid 48646] close(4)                    = 0

     [pid 48646] mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7f0e8948a000

     [pid 48646] arch_prctl(ARCH_SET_FS, 0x7f0e8948b440) = 0

     [pid 48646] set_tid_address(0x7f0e8948b710) = 48646

     [pid 48646] set_robust_list(0x7f0e8948b720, 24) = 0

     [pid 48646] rseq(0x7f0e8948bd60, 0x20, 0, 0x53053053) = 0

     [pid 48646] mprotect(0x7f0e88ff2000, 16384, PROT_READ) = 0

     [pid 48646] mprotect(0x7f0e894ae000, 4096, PROT_READ) = 0

     [pid 48646] mprotect(0x7f0e89597000, 4096, PROT_READ) = 0

     [pid 48646] mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7f0e89488000
```

```
     [pid 48646] mprotect(0x7f0e8945a000, 45056, PROT_READ) = 0

     [pid 48646] mprotect(0x56366d9ee000, 4096, PROT_READ) = 0

     [pid 48646] mprotect(0x7f0e895e7000, 8192, PROT_READ) = 0

     [pid 48646] prlimit64(0, RLIMIT_STACK, NULL, {rlim_cur=8192*1024,
rlim_max=RLIM64_INFINITY}) = 0

     [pid 48646] munmap(0x7f0e89599000, 102171) = 0

     [pid 48646] futex(0x7f0e894687fc, FUTEX_WAKE_PRIVATE, 2147483647) = 0

     [pid 48646] getrandom("\xa0\xb3\x40\x40\x83\x7b\x4c\x81", 8, GRND_NONBLOCK) = 8

     [pid 48646] brk(NULL)                   = 0x56366dd34000

     [pid 48646] brk(0x56366dd55000)         = 0x56366dd55000

     [pid 48646] read(0,

      <unfinished ...>

     [pid 48645] <... read resumed>"\n", 1024) = 1

     [pid 48645] write(1, "Enter numbers:\n", 15Enter numbers:

     ) = 15

     [pid 48645] read(0,

     "\n", 1024)         = 1

     [pid 48645] write(4, "\n\n\0", 3)       = 3

     [pid 48646] <... read resumed>"\n\n\0", 200) = 3

     [pid 48645] read(5,  <unfinished ...>

     [pid 48646] newfstatat(1, "", {st_mode=S_IFIFO|0600, st_size=0, ...}, AT_EMPTY_PATH) =
0

     [pid 48646] write(1, "\320\236\321\210\320\270\320\261\320\272\320\260
\321\200\320\260\320\267\320\261\320\276\321\200\320\260 \321\201\321\202"..., 41) = 41

     [pid 48645] <... read resumed>"\320\236\321\210", 4) = 4

     [pid 48646] exit_group(1)               = ?

     [pid 48645] write(1, "\320\241\321\203\320\274\320\274\320\260
\321\207\320\270\321\201\320\265\320\273: -19995282"..., 35Сумма чисел: -1999528240

     ) = 35

     [pid 48645] close(4)                    = 0

     [pid 48645] close(5)                    = 0

     [pid 48645] wait4(-1,  <unfinished ...>

     [pid 48646] +++ exited with 1 +++

     <... wait4 resumed>NULL, 0, NULL)       = 48646
```

```
--- SIGCHLD {si_signo=SIGCHLD, si_code=CLD_EXITED, si_pid=48646, si_uid=1000,
si_status=1, si_utime=0, si_stime=0} ---

exit_group(0)                           = ?

+++ exited with 0 +++
```

Laba_2:

```
$ strace -f ./main

execve("./main", ["./main", "2"], 0x7ffd2d985720 /* 47 vars */) = 0

brk(NULL)                               = 0x55b21ad69000

arch_prctl(0x3001 /* ARCH_??? */, 0x7fff360e4370) = -1 EINVAL (Недопустимый аргумент)

mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fb302c55000

access("/etc/ld.so.preload", R_OK)      = -1 ENOENT (Нет такого файла или каталога)

openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC) = 3

newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=119923, ...}, AT_EMPTY_PATH) = 0

mmap(NULL, 119923, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7fb302c37000

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<\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

newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=2072888, ...}, 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, 2117488, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fb302a00000

mmap(0x7fb302a22000, 1540096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x22000) = 0x7fb302a22000

mmap(0x7fb302b9a000, 360448, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x19a000) = 0x7fb302b9a000

mmap(0x7fb302bf2000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x1f1000) = 0x7fb302bf2000

mmap(0x7fb302bf8000, 53104, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x7fb302bf8000

close(3)                                = 0

mmap(NULL, 12288, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fb302c34000

arch_prctl(ARCH_SET_FS, 0x7fb302c34740) = 0

set_tid_address(0x7fb302c34a10)         = 25689

set_robust_list(0x7fb302c34a20, 24)     = 0

rseq(0x7fb302c35060, 0x20, 0, 0x53053053) = 0
```

```
     mprotect(0x7fb302bf2000, 16384, PROT_READ) = 0

     mprotect(0x55b219bd8000, 4096, PROT_READ) = 0

     mprotect(0x7fb302c8a000, 8192, PROT_READ) = 0

     prlimit64(0, RLIMIT_STACK, NULL, {rlim_cur=8192*1024, rlim_max=RLIM64_INFINITY}) = 0

     munmap(0x7fb302c37000, 119923)          = 0

     newfstatat(1, "", {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0x1), ...},
AT_EMPTY_PATH) = 0

     getrandom("\x4b\x6e\x76\xba\xc4\x9a\xf8\x91", 8, GRND_NONBLOCK) = 8

     brk(NULL)                               = 0x55b21ad69000

     brk(0x55b21ad8a000)                     = 0x55b21ad8a000

     newfstatat(0, "", {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0x1), ...},
AT_EMPTY_PATH) = 0

     write(1, "length of arrays N: ", 20length of arrays N: )    = 20

     read(0, 3

     "3\n", 1024)                    = 2

     write(1, "number of arrays K: ", 20number of arrays K: )    = 20

     read(0, 4

     "4\n", 1024)                    = 2

     read(0, 1 2 3

     "1 2 3\n", 1024)                = 6

     read(0, 3 4 5

     "3 4 5\n", 1024)                = 6

     read(0, 6 5 4

     "6 5 4\n", 1024)                = 6

     read(0, 5 6 7

     "5 6 7\n", 1024)                = 6

     write(1, "horizontal\n", 11horizontal

     )            = 11

     rt_sigaction(SIGRT_1, {sa_handler=0x7fb302a8c450, sa_mask=[],
sa_flags=SA_RESTORER|SA_ONSTACK|SA_RESTART|SA_SIGINFO, sa_restorer=0x7fb302a3c460}, 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) =
0x7fb3021ff000

     mprotect(0x7fb302200000, 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|CL
ONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, child_tid=0x7fb3029ff990,
```

parent_tid=0x7fb3029ff990, exit_signal=0, stack=0x7fb3021ff000, stack_size=0x7fff80, tls=0x7fb3029ff6c0}strace: Process 25737 attached

=> {parent_tid=[25737]}, 88) = 25737

[pid 25737] rseq(0x7fb3029fffe0, 0x20, 0, 0x53053053 <unfinished ...>

[pid 25689] rt_sigprocmask(SIG_SETMASK, [], <unfinished ...>

[pid 25737] <... rseq resumed>) = 0

[pid 25689] <... rt_sigprocmask resumed>NULL, 8) = 0

[pid 25737] set_robust_list(0x7fb3029ff9a0, 24 <unfinished ...>

[pid 25689] mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|MAP_STACK, -1, 0 <unfinished ...>

[pid 25737] <... set_robust_list resumed>) = 0

[pid 25689] <... mmap resumed>) = 0x7fb3019fe000

[pid 25737] rt_sigprocmask(SIG_SETMASK, [], <unfinished ...>

[pid 25689] mprotect(0x7fb3019ff000, 8388608, PROT_READ|PROT_WRITE <unfinished ...>

[pid 25737] <... rt_sigprocmask resumed>NULL, 8) = 0

[pid 25689] <... mprotect resumed>) = 0

[pid 25689] rt_sigprocmask(SIG_BLOCK, ~[], <unfinished ...>

[pid 25737] rt_sigprocmask(SIG_BLOCK, ~[RT_1], <unfinished ...>

[pid 25689] <... rt_sigprocmask resumed>[], 8) = 0

[pid 25737] <... rt_sigprocmask resumed>NULL, 8) = 0

[pid 25689] **clone3({flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, child_tid=0x7fb3021fe990, parent_tid=0x7fb3021fe990, exit_signal=0, stack=0x7fb3019fe000, stack_size=0x7fff80, tls=0x7fb3021fe6c0} <unfinished ...>**

[pid 25737] madvise(0x7fb3021ff000, 8368128, MADV_DONTNEED) = 0

strace: Process 25738 attached

[pid 25689] <... clone3 resumed> => {parent_tid=[25738]}, 88) = 25738

[pid 25737] exit(0 <unfinished ...>

[pid 25689] rt_sigprocmask(SIG_SETMASK, [], <unfinished ...>

[pid 25737] <... exit resumed>) = ?

[pid 25689] <... rt_sigprocmask resumed>NULL, 8) = 0

[pid 25738] rseq(0x7fb3021fefe0, 0x20, 0, 0x53053053 <unfinished ...>

[pid 25689] futex(0x7fb3021fe990, FUTEX_WAIT_BITSET|FUTEX_CLOCK_REALTIME, 25738, NULL, FUTEX_BITSET_MATCH_ANY <unfinished ...>

[pid 25737] +++ exited with 0 +++

[pid 25738] <... rseq resumed>) = 0

[pid 25738] set_robust_list(0x7fb3021fe9a0, 24) = 0

[pid 25738] rt_sigprocmask(SIG_SETMASK, [], NULL, 8) = 0

```
[pid 25738] rt_sigprocmask(SIG_BLOCK, ~[RT_1], NULL, 8) = 0
[pid 25738] madvise(0x7fb3019fe000, 8368128, MADV_DONTNEED) = 0
[pid 25738] exit(0)                     = ?
[pid 25689] <... futex resumed>)        = 0
[pid 25738] +++ exited with 0 +++
write(1, "Execution time: 0.001985 seconds"..., 33Execution time: 0.001985 seconds
) = 33
write(1, "15 17 19 \n", 1015 17 19
)             = 10
lseek(0, -1, SEEK_CUR)                  = -1 ESPIPE (Недопустимая операция смещения)
exit_group(0)                           = ?
+++ exited with 0 +++
```

Laba_3:

```
$ strace -f ./main
execve("./main", ["./main"], 0x7ffc378e9098 /* 47 vars */) = 0
brk(NULL)                               = 0x556e44f35000
arch_prctl(0x3001 /* ARCH_??? */, 0x7ffdb5fd44b0) = -1 EINVAL (Недопустимый аргумент)
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fd89db51000
access("/etc/ld.so.preload", R_OK)      = -1 ENOENT (Нет такого файла или каталога)
openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC) = 3
newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=103055, ...}, AT_EMPTY_PATH) = 0
mmap(NULL, 103055, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7fd89db37000
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\0"..., 832) = 832
newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=2522552, ...}, AT_EMPTY_PATH) = 0
mmap(NULL, 2535872, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fd89d800000
mmap(0x7fd89d89c000, 1249280, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x9c000) = 0x7fd89d89c000
mmap(0x7fd89d9cd000, 577536, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x1cd000) = 0x7fd89d9cd000
mmap(0x7fd89da5a000, 57344, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x25a000) = 0x7fd89da5a000
mmap(0x7fd89da68000, 12736, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x7fd89da68000
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<\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

     newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=2072888, ...}, 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, 2117488, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fd89d400000

     mmap(0x7fd89d422000, 1540096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x22000) = 0x7fd89d422000

     mmap(0x7fd89d59a000, 360448, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x19a000) = 0x7fd89d59a000

     mmap(0x7fd89d5f2000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x1f1000) = 0x7fd89d5f2000

     mmap(0x7fd89d5f8000, 53104, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x7fd89d5f8000

     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=948816, ...}, AT_EMPTY_PATH) = 0

     mmap(NULL, 950520, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fd89d717000

     mmap(0x7fd89d725000, 516096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0xe000) = 0x7fd89d725000

     mmap(0x7fd89d7a3000, 372736, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x8c000) = 0x7fd89d7a3000

     mmap(0x7fd89d7fe000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0xe6000) = 0x7fd89d7fe000

     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\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=141872, ...}, AT_EMPTY_PATH) = 0

     mmap(NULL, 144232, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fd89db13000

     mmap(0x7fd89db16000, 110592, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x3000) = 0x7fd89db16000

     mmap(0x7fd89db31000, 16384, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1e000)
= 0x7fd89db31000

     mmap(0x7fd89db35000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x21000) = 0x7fd89db35000

     close(3)                                = 0

     mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fd89db11000
```

```
arch_prctl(ARCH_SET_FS, 0x7fd89db12440) = 0

set_tid_address(0x7fd89db12710)         = 17260

set_robust_list(0x7fd89db12720, 24)     = 0

rseq(0x7fd89db12d60, 0x20, 0, 0x53053053) = 0

mprotect(0x7fd89d5f2000, 16384, PROT_READ) = 0

mprotect(0x7fd89db35000, 4096, PROT_READ) = 0

mprotect(0x7fd89d7fe000, 4096, PROT_READ) = 0

mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fd89db0f000

mprotect(0x7fd89da5a000, 45056, PROT_READ) = 0

mprotect(0x556e44ec1000, 4096, PROT_READ) = 0

mprotect(0x7fd89db86000, 8192, PROT_READ) = 0

prlimit64(0, RLIMIT_STACK, NULL, {rlim_cur=8192*1024, rlim_max=RLIM64_INFINITY}) = 0

munmap(0x7fd89db37000, 103055)          = 0

futex(0x7fd89da687fc, FUTEX_WAKE_PRIVATE, 2147483647) = 0

getrandom("\x53\xf6\xbd\x66\x97\x42\xce\x8c", 8, GRND_NONBLOCK) = 8

brk(NULL)                               = 0x556e44f35000

brk(0x556e44f56000)                     = 0x556e44f56000

openat(AT_FDCWD, "/dev/shm/my_shared_memory", O_RDWR|O_CREAT|O_NOFOLLOW|O_CLOEXEC,
0600) = 3

ftruncate(3, 256)                       = 0

mmap(NULL, 256, PROT_READ|PROT_WRITE, MAP_SHARED, 3, 0) = 0x7fd89db50000

clone(child_stack=NULL, flags=CLONE_CHILD_CLEARTID|CLONE_CHILD_SETTID|SIGCHLD,
child_tidptr=0x7fd89db12710) = 17261

strace: Process 17261 attached

[pid 17260] newfstatat(1, "",  <unfinished ...>

[pid 17261] set_robust_list(0x7fd89db12720, 24 <unfinished ...>

[pid 17260] <... newfstatat resumed>{st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0),
...}, AT_EMPTY_PATH) = 0

[pid 17261] <... set_robust_list resumed>) = 0

[pid 17260] write(1, "Enter filename:\n", 16Enter filename:

) = 16

[pid 17261] execve("./child", ["./child"], 0x7ffdb5fd4618 /* 47 vars */ <unfinished
...>

[pid 17260] newfstatat(0, "", {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0), ...},
AT_EMPTY_PATH) = 0

[pid 17260] read(0,  <unfinished ...>

[pid 17261] <... execve resumed>)       = 0
```

```
     [pid 17261] brk(NULL)                   = 0x55f1088fd000

     [pid 17261] arch_prctl(0x3001 /* ARCH_??? */, 0x7ffc96d89560) = -1 EINVAL
(Недопустимый аргумент)

     [pid 17261] mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7f98d5c14000

     [pid 17261] access("/etc/ld.so.preload", R_OK) = -1 ENOENT (Нет такого файла или
каталога)

     [pid 17261] openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC) = 3

     [pid 17261] newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=103055, ...},
AT_EMPTY_PATH) = 0

     [pid 17261] mmap(NULL, 103055, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7f98d5bfa000

     [pid 17261] close(3)                    = 0

     [pid 17261] openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libstdc++.so.6",
O_RDONLY|O_CLOEXEC) = 3

     [pid 17261] read(3,
"\177ELF\2\1\1\3\0\0\0\0\0\0\0\3\0>\0\1\0\0\0\0\0\0\0\0\0\0"..., 832) = 832

     [pid 17261] newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=2522552, ...},
AT_EMPTY_PATH) = 0

     [pid 17261] mmap(NULL, 2535872, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) =
0x7f98d5800000

     [pid 17261] mmap(0x7f98d589c000, 1249280, PROT_READ|PROT_EXEC,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x9c000) = 0x7f98d589c000

     [pid 17261] mmap(0x7f98d59cd000, 577536, PROT_READ,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1cd000) = 0x7f98d59cd000

     [pid 17261] mmap(0x7f98d5a5a000, 57344, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x25a000) = 0x7f98d5a5a000

     [pid 17261] mmap(0x7f98d5a68000, 12736, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7f98d5a68000

     [pid 17261] close(3)                    = 0

     [pid 17261] openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libc.so.6", O_RDONLY|O_CLOEXEC) = 3

     [pid 17261] read(3, "\177ELF\2\1\1\3\0\0\0\0\0\0\0\3\0>\0\1\0\0\0P<\2\0\0\0\0\0"...,
832) = 832

     [pid 17261] 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

     [pid 17261] newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=2072888, ...},
AT_EMPTY_PATH) = 0

     [pid 17261] 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

     [pid 17261] mmap(NULL, 2117488, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) =
0x7f98d5400000

     [pid 17261] mmap(0x7f98d5422000, 1540096, PROT_READ|PROT_EXEC,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x22000) = 0x7f98d5422000

     [pid 17261] mmap(0x7f98d559a000, 360448, PROT_READ,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x19a000) = 0x7f98d559a000
```

```
     [pid 17261] mmap(0x7f98d55f2000, 24576, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1f1000) = 0x7f98d55f2000

     [pid 17261] mmap(0x7f98d55f8000, 53104, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7f98d55f8000

     [pid 17261] close(3)                    = 0

     [pid 17261] openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libm.so.6", O_RDONLY|O_CLOEXEC) = 3

     [pid 17261] 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

     [pid 17261] newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=948816, ...},
AT_EMPTY_PATH) = 0

     [pid 17261] mmap(NULL, 950520, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) =
0x7f98d5b11000

     [pid 17261] mmap(0x7f98d5b1f000, 516096, PROT_READ|PROT_EXEC,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0xe000) = 0x7f98d5b1f000

     [pid 17261] mmap(0x7f98d5b9d000, 372736, PROT_READ,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x8c000) = 0x7f98d5b9d000

     [pid 17261] mmap(0x7f98d5bf8000, 8192, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0xe6000) = 0x7f98d5bf8000

     [pid 17261] close(3)                    = 0

     [pid 17261] openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libgcc_s.so.1", O_RDONLY|O_CLOEXEC)
= 3

     [pid 17261] 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 17261] newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=141872, ...},
AT_EMPTY_PATH) = 0

     [pid 17261] mmap(NULL, 144232, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) =
0x7f98d5aed000

     [pid 17261] mmap(0x7f98d5af0000, 110592, PROT_READ|PROT_EXEC,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x3000) = 0x7f98d5af0000

     [pid 17261] mmap(0x7f98d5b0b000, 16384, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x1e000) = 0x7f98d5b0b000

     [pid 17261] mmap(0x7f98d5b0f000, 8192, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x21000) = 0x7f98d5b0f000

     [pid 17261] close(3)                    = 0

     [pid 17261] mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7f98d5aeb000

     [pid 17261] arch_prctl(ARCH_SET_FS, 0x7f98d5aec440) = 0

     [pid 17261] set_tid_address(0x7f98d5aec710) = 17261

     [pid 17261] set_robust_list(0x7f98d5aec720, 24) = 0

     [pid 17261] rseq(0x7f98d5aecd60, 0x20, 0, 0x53053053) = 0

     [pid 17261] mprotect(0x7f98d55f2000, 16384, PROT_READ) = 0

     [pid 17261] mprotect(0x7f98d5b0f000, 4096, PROT_READ) = 0

     [pid 17261] mprotect(0x7f98d5bf8000, 4096, PROT_READ) = 0
```

```
[pid 17261] mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7f98d5ae9000

[pid 17261] mprotect(0x7f98d5a5a000, 45056, PROT_READ) = 0

[pid 17261] mprotect(0x55f108561000, 4096, PROT_READ) = 0

[pid 17261] mprotect(0x7f98d5c49000, 8192, PROT_READ) = 0

[pid 17261] prlimit64(0, RLIMIT_STACK, NULL, {rlim_cur=8192*1024,
rlim_max=RLIM64_INFINITY}) = 0

[pid 17261] munmap(0x7f98d5bfa000, 103055) = 0

[pid 17261] futex(0x7f98d5a687fc, FUTEX_WAKE_PRIVATE, 2147483647) = 0

[pid 17261] getrandom("\x91\xb1\x1e\x83\xca\x3b\xa4\x71", 8, GRND_NONBLOCK) = 8

[pid 17261] brk(NULL)                   = 0x55f1088fd000

[pid 17261] brk(0x55f10891e000)         = 0x55f10891e000

[pid 17261] openat(AT_FDCWD, "/dev/shm/my_shared_memory", O_RDWR|O_NOFOLLOW|O_CLOEXEC)
= 3

[pid 17261] mmap(NULL, 256, PROT_READ|PROT_WRITE, MAP_SHARED, 3, 0) = 0x7f98d5c13000


[pid 17260] <... read resumed>"\n", 1024) = 1

[pid 17260] write(1, "Enter numbers:\n", 15Enter numbers:

) = 15

[pid 17260] read(0,

"\n", 1024)         = 1

[pid 17260] wait4(-1,  <unfinished ...>

[pid 17261] newfstatat(1, "", {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0), ...},
AT_EMPTY_PATH) = 0

[pid 17261] write(1, "\320\236\321\210\320\270\320\261\320\272\320\260
\321\200\320\260\320\267\320\261\320\276\321\200\320\260 \321\201\321\202"..., 41Ошибка
разбора строки

) = 41

[pid 17261] exit_group(1)               = ?

[pid 17261] +++ exited with 1 +++

<... wait4 resumed>NULL, 0, NULL)       = 17261

--- SIGCHLD {si_signo=SIGCHLD, si_code=CLD_EXITED, si_pid=17261, si_uid=1000,
si_status=1, si_utime=3898 /* 38.98 s */, si_stime=1 /* 0.01 s */} ---

write(1, "Summa = 0\n", 10Summa = 0

)             = 10

close(3)                                = 0

munmap(0x7fd89db50000, 256)             = 0

unlink("/dev/shm/my_shared_memory")     = 0

wait4(-1, NULL, 0, NULL)                = -1 ECHILD (Нет дочерних процессов)
```

```
exit_group(0)                           = ?

+++ exited with 0 +++
```

Laba_4:

```
execve("./main", ["./main"], 0x7ffff87357b8 /* 47 vars */) = 0

brk(NULL)                               = 0x55899a1f6000

arch_prctl(0x3001 /* ARCH_??? */, 0x7ffc96f72360) = -1 EINVAL (Недопустимый аргумент)

mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8ea8000

access("/etc/ld.so.preload", R_OK)      = -1 ENOENT (Нет такого файла или каталога)

openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC) = 3

newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=119923, ...}, AT_EMPTY_PATH) = 0

mmap(NULL, 119923, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7fdba8e8a000

close(3)                                = 0

openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libasan.so.8", 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=10108112, ...}, AT_EMPTY_PATH) = 0

mmap(NULL, 6961512, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fdba8600000

mmap(0x7fdba8625000, 1110016, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x25000) = 0x7fdba8625000

mmap(0x7fdba8734000, 217088, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x134000) = 0x7fdba8734000

mmap(0x7fdba8769000, 28672, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x168000) = 0x7fdba8769000

mmap(0x7fdba8770000, 5454184, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7fdba8770000

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<\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

newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=2072888, ...}, 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, 2117488, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fdba8200000

mmap(0x7fdba8222000, 1540096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x22000) = 0x7fdba8222000

mmap(0x7fdba839a000, 360448, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x19a000) = 0x7fdba839a000
```

```
     mmap(0x7fdba83f2000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x1f1000) = 0x7fdba83f2000

     mmap(0x7fdba83f8000, 53104, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x7fdba83f8000

     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\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=948816, ...}, AT_EMPTY_PATH) = 0

     mmap(NULL, 950520, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fdba8da1000

     mmap(0x7fdba8daf000, 516096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0xe000) = 0x7fdba8daf000

     mmap(0x7fdba8e2d000, 372736, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x8c000) = 0x7fdba8e2d000

     mmap(0x7fdba8e88000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0xe6000) = 0x7fdba8e88000

     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\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=141872, ...}, AT_EMPTY_PATH) = 0

     mmap(NULL, 144232, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fdba8d7d000

     mmap(0x7fdba8d80000, 110592, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x3000) = 0x7fdba8d80000

     mmap(0x7fdba8d9b000, 16384, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1e000)
= 0x7fdba8d9b000

     mmap(0x7fdba8d9f000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x21000) = 0x7fdba8d9f000

     close(3)                                = 0

     mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8d7b000

     arch_prctl(ARCH_SET_FS, 0x7fdba8d7be80) = 0

     set_tid_address(0x7fdba8d7c150)         = 38562

     set_robust_list(0x7fdba8d7c160, 24)     = 0

     rseq(0x7fdba8d7c7a0, 0x20, 0, 0x53053053) = 0

     mprotect(0x7fdba83f2000, 16384, PROT_READ) = 0

     mprotect(0x7fdba8d9f000, 4096, PROT_READ) = 0

     mprotect(0x7fdba8e88000, 4096, PROT_READ) = 0

     mprotect(0x7fdba8769000, 16384, PROT_READ) = 0

     mprotect(0x558998b4d000, 4096, PROT_READ) = 0

     mprotect(0x7fdba8edd000, 8192, PROT_READ) = 0

     prlimit64(0, RLIMIT_STACK, NULL, {rlim_cur=8192*1024, rlim_max=RLIM64_INFINITY}) = 0
```

```
     munmap(0x7fdba8e8a000, 119923)          = 0

     readlinkat(AT_FDCWD, "/proc/self/exe", "/home/katya/MAI_2/OS/github/OS_M"..., 4096) =
50

     mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8ea7000

     openat(AT_FDCWD, "/proc/self/cmdline", O_RDONLY) = 3

     read(3, "./main\0", 4096)               = 7

     read(3, "", 4089)                       = 0

     close(3)                                = 0

     munmap(0x7fdba8ea7000, 4096)            = 0

     mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8ea7000

     openat(AT_FDCWD, "/proc/self/environ", O_RDONLY) = 3

     read(3, "SHELL=/bin/bash\0SESSION_MANAGER="..., 4096) = 3323

     read(3, "", 773)                        = 0

     close(3)                                = 0

     mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8ea5000

     mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8ea3000

     mmap(NULL, 3727360, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba7e72000

     mmap(NULL, 2097152, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba7c72000

     munmap(0x7fdba7c72000, 581632)          = 0

     munmap(0x7fdba7e00000, 466944)          = 0

     mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8ea2000

     mmap(NULL, 2097152, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba7b00000

     munmap(0x7fdba7c00000, 1048576)         = 0

     mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8ea1000

     mmap(NULL, 2097152, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba7900000

     munmap(0x7fdba7a00000, 1048576)         = 0

     mmap(NULL, 2097152, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba7700000

     munmap(0x7fdba7800000, 1048576)         = 0

     mmap(NULL, 2097152, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba7500000
```

```
     munmap(0x7fdba7600000, 1048576)         = 0

     mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8ea0000

     prlimit64(0, RLIMIT_CORE, NULL, {rlim_cur=0, rlim_max=RLIM64_INFINITY}) = 0

     prlimit64(0, RLIMIT_CORE, {rlim_cur=0, rlim_max=RLIM64_INFINITY}, NULL) = 0

     mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8e9f000

     openat(AT_FDCWD, "/proc/self/maps", O_RDONLY) = 3

     read(3, "558998b4a000-558998b4b000 r--p 0"..., 4096) = 4026

     read(3, "7ffc96f9d000-7ffc96fa1000 r--p 0"..., 70) = 70

     close(3)                                = 0

     munmap(0x7fdba8e9f000, 4096)            = 0

     mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8e9e000

     openat(AT_FDCWD, "/proc/self/maps", O_RDONLY) = 3

     read(3, "558998b4a000-558998b4b000 r--p 0"..., 8192) = 4026

     read(3, "7ffc96f9d000-7ffc96fa1000 r--p 0"..., 4166) = 244

     read(3, "", 3922)                       = 0

     close(3)                                = 0

     mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8e9d000

     openat(AT_FDCWD, "/proc/self/maps", O_RDONLY) = 3

     read(3, "558998b4a000-558998b4b000 r--p 0"..., 4096) = 4026

     read(3, "7ffc96f9d000-7ffc96fa1000 r--p 0"..., 70) = 70

     close(3)                                = 0

     munmap(0x7fdba8e9d000, 4096)            = 0

     mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8e9c000

     openat(AT_FDCWD, "/proc/self/maps", O_RDONLY) = 3

     read(3, "558998b4a000-558998b4b000 r--p 0"..., 8192) = 4026

     read(3, "7ffc96f9d000-7ffc96fa1000 r--p 0"..., 4166) = 244

     read(3, "", 3922)                       = 0

     close(3)                                = 0

     munmap(0x7fdba8e9c000, 8192)            = 0

     mmap(0x7fff7000, 268435456, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS|MAP_NORESERVE, -1, 0) = 0x7fff7000

     madvise(0x7fff7000, 268435456, MADV_NOHUGEPAGE) = 0

     madvise(0x7fff7000, 268435456, MADV_DONTDUMP) = 0
```

```
     mmap(0x2008fff7000, 15392894357504, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS|MAP_NORESERVE, -1, 0) = 0x2008fff7000

     madvise(0x2008fff7000, 15392894357504, MADV_NOHUGEPAGE) = 0

     madvise(0x2008fff7000, 15392894357504, MADV_DONTDUMP) = 0

     mmap(0x8fff7000, 2199023255552, PROT_NONE,
MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS|MAP_NORESERVE, -1, 0) = 0x8fff7000

     sigaltstack(NULL, {ss_sp=NULL, ss_flags=SS_DISABLE, ss_size=0}) = 0

     mmap(NULL, 32768, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8e96000

     sigaltstack({ss_sp=0x7fdba8e96000, ss_flags=0, ss_size=32768}, NULL) = 0

     rt_sigaction(SIGSEGV, {sa_handler=0x7fdba86e4580, sa_mask=[],
sa_flags=SA_RESTORER|SA_ONSTACK|SA_NODEFER|SA_SIGINFO, sa_restorer=0x7fdba823c460}, NULL, 8)
= 0

     rt_sigaction(SIGBUS, {sa_handler=0x7fdba86e4580, sa_mask=[],
sa_flags=SA_RESTORER|SA_ONSTACK|SA_NODEFER|SA_SIGINFO, sa_restorer=0x7fdba823c460}, NULL, 8)
= 0

     rt_sigaction(SIGFPE, {sa_handler=0x7fdba86e4580, sa_mask=[],
sa_flags=SA_RESTORER|SA_ONSTACK|SA_NODEFER|SA_SIGINFO, sa_restorer=0x7fdba823c460}, NULL, 8)
= 0

     mmap(0x600000000000, 4398046519296, PROT_NONE,
MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS|MAP_NORESERVE, -1, 0) = 0x600000000000

     mmap(0x640000000000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x640000000000

     mmap(NULL, 8388608, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|MAP_NORESERVE, -1, 0) =
0x7fdba6d00000

     mmap(NULL, 57344, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8d6d000

     mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8e95000

     mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8e94000

     getpid()                                = 38562

     prlimit64(0, RLIMIT_STACK, NULL, {rlim_cur=8192*1024, rlim_max=RLIM64_INFINITY}) = 0

     mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8e93000

     openat(AT_FDCWD, "/proc/self/maps", O_RDONLY) = 3

     read(3, "7fff7000-8fff7000 rw-p 00000000 "..., 4096) = 3985

     read(3, "7fdba8edd000-7fdba8edf000 r--p 0"..., 111) = 111

     close(3)                                = 0

     munmap(0x7fdba8e93000, 4096)            = 0

     mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8e92000

     openat(AT_FDCWD, "/proc/self/maps", O_RDONLY) = 3
```

```
     read(3, "7fff7000-8fff7000 rw-p 00000000 "..., 8192) = 3985

     read(3, "7fdba8edd000-7fdba8edf000 r--p 0"..., 4207) = 565

     read(3, "", 3642)                       = 0

     close(3)                                = 0

     munmap(0x7fdba8e9e000, 8192)            = 0

     mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8e9f000

     openat(AT_FDCWD, "/proc/self/maps", O_RDONLY) = 3

     read(3, "7fff7000-8fff7000 rw-p 00000000 "..., 4096) = 4034

     read(3, "7fdba8edd000-7fdba8edf000 r--p 0"..., 62) = 62

     close(3)                                = 0

     munmap(0x7fdba8e9f000, 4096)            = 0

     mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8e9e000

     openat(AT_FDCWD, "/proc/self/maps", O_RDONLY) = 3

     read(3, "7fff7000-8fff7000 rw-p 00000000 "..., 8192) = 3985

     read(3, "7fdba8edd000-7fdba8edf000 r--p 0"..., 4207) = 565

     read(3, "", 3642)                       = 0

     close(3)                                = 0

     munmap(0x7fdba8e9e000, 8192)            = 0

     mmap(0x100012ce7000, 1044480, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS|MAP_NORESERVE, -1, 0) = 0x100012ce7000

     madvise(0x100012ce7000, 1044480, MADV_NOHUGEPAGE) = 0

     madvise(0x100012ce7000, 1044480, MADV_DONTDUMP) = 0

     mmap(NULL, 11571200, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba61f7000

     mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8e9f000

     sigaltstack(NULL, {ss_sp=0x7fdba8e96000, ss_flags=0, ss_size=32768}) = 0

     mmap(NULL, 1703936, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8460000

     mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8e9e000

     mmap(NULL, 2097152, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba5ff7000

     munmap(0x7fdba5ff7000, 36864)           = 0

     munmap(0x7fdba6100000, 1011712)         = 0

     munmap(0x7fdba8e9e000, 4096)            = 0

     mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8e9e000
```

```
mmap(NULL, 2097152, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7fdba5e00000

munmap(0x7fdba5f00000, 1048576)         = 0

mmap(NULL, 2097152, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7fdba5c00000

munmap(0x7fdba5d00000, 1048576)         = 0

munmap(0x7fdba8e9e000, 4096)            = 0

mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7fdba8e9e000

munmap(0x7fdba8e9e000, 4096)            = 0

mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7fdba8e9e000

munmap(0x7fdba8e9e000, 4096)            = 0

mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7fdba8e9e000

munmap(0x7fdba8e9e000, 4096)            = 0

mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7fdba8e9e000

munmap(0x7fdba8e9e000, 4096)            = 0

mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7fdba8e9e000

munmap(0x7fdba8e9e000, 4096)            = 0

mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7fdba8e9e000

mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7fdba8e91000

mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7fdba8e8f000

clock_gettime(CLOCK_MONOTONIC, {tv_sec=13712, tv_nsec=486994678}) = 0

mmap(0x607000000000, 65536, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x607000000000

mmap(0x607e00000000, 65536, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x607e00000000

mmap(NULL, 1048576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7fdba7c00000

mmap(NULL, 8388608, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS|MAP_NORESERVE, -1, 0) = 0x7fdba5400000

clock_gettime(CLOCK_MONOTONIC, {tv_sec=13712, tv_nsec=487407556}) = 0

mmap(0x603000000000, 65536, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x603000000000

mmap(0x603e00000000, 65536, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x603e00000000
```

```
     mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8e8e000

     mmap(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fdba8e8d000

     newfstatat(1, "", {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0x1), ...},
AT_EMPTY_PATH) = 0

     mmap(0x619000000000, 65536, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x619000000000

     mmap(0x619e00000000, 65536, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x619e00000000

     write(1, "\n", 1

     )                        = 1

     write(1, "Write:\n", 7Write:

     )                 = 7

     write(1, " [command] [arg1] ... [argN]\n", 29 [command] [arg1] ... [argN]

     ) = 29

     write(1, "\n", 1

     )                        = 1

     write(1, "If you want to change methods of"..., 54If you want to change methods of
calculation, write 0

     ) = 54

     write(1, "\n", 1

     )                        = 1

     write(1, "If you want to take derivation o"..., 73If you want to take derivation of
f(x) = cos(x), write 1 [point] [delta]

     ) = 73

     write(1, "\n", 1

     )                        = 1

     write(1, "If you want to calculate number "..., 87If you want to calculate number e
(base of natural logarithm), write 2 [approximation]

     ) = 87

     mmap(0x624000000000, 65536, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x624000000000

     mmap(0x624e00000000, 65536, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x624e00000000

     mmap(0x602000000000, 65536, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x602000000000

     mmap(0x602e00000000, 65536, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x602e00000000

     openat(AT_FDCWD, "./liblib1.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\0"..., 832) = 832
```

```
     newfstatat(3, "", {st_mode=S_IFREG|0775, st_size=15728, ...}, AT_EMPTY_PATH) = 0

     mmap(0x61a000000000, 65536, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x61a000000000

     mmap(0x61ae00000000, 65536, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x61ae00000000

     mmap(0x60d000000000, 65536, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x60d000000000

     mmap(0x60de00000000, 65536, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x60de00000000

     getcwd("/home/katya/MAI_2/OS/github/OS_MAI/lab4/build", 128) = 46

     mmap(NULL, 16432, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fdba8d68000

     mmap(0x7fdba8d69000, 4096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x1000) = 0x7fdba8d69000

     mmap(0x7fdba8d6a000, 4096, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x2000) =
0x7fdba8d6a000

     mmap(0x7fdba8d6b000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x2000) = 0x7fdba8d6b000

     close(3)                                = 0

     mmap(0x606000000000, 65536, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x606000000000

     mmap(0x606e00000000, 65536, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x606e00000000

     mprotect(0x7fdba8d6b000, 4096, PROT_READ) = 0

     mmap(0x61d000000000, 65536, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x61d000000000

     mmap(0x61de00000000, 65536, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x61de00000000

     write(1, "\nCurrent lib is 0\n\n", 19

     Current lib is 0



     )  = 19

     newfstatat(0, "", {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0x1), ...},
AT_EMPTY_PATH) = 0

     read(0, 0

     "0\n", 1024)                      = 2

     munmap(0x7fdba8d68000, 16432)           = 0

     openat(AT_FDCWD, "./liblib2.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|0775, st_size=15856, ...}, AT_EMPTY_PATH) = 0

     getcwd("/home/katya/MAI_2/OS/github/OS_MAI/lab4/build", 128) = 46

     mmap(NULL, 16448, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fdba8d68000
```

```
     mmap(0x7fdba8d69000, 4096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x1000) = 0x7fdba8d69000

     mmap(0x7fdba8d6a000, 4096, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x2000) =
0x7fdba8d6a000

     mmap(0x7fdba8d6b000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x2000) = 0x7fdba8d6b000

     close(3)                                = 0

     mprotect(0x7fdba8d6b000, 4096, PROT_READ) = 0

     write(1, "\nWrite:\n", 8

     Write:

     )               = 8

     write(1, " [command] [arg1] ... [argN]\n", 29 [command] [arg1] ... [argN]

     ) = 29

     write(1, "\n", 1

     )                       = 1

     write(1, "If you want to change methods of"..., 54If you want to change methods of
calculation, write 0

     ) = 54

     write(1, "\n", 1

     )                       = 1

     write(1, "If you want to take derivation o"..., 73If you want to take derivation of
f(x) = cos(x), write 1 [point] [delta]

     ) = 73

     write(1, "\n", 1

     )                       = 1

     write(1, "If you want to calculate number "..., 87If you want to calculate number e
(base of natural logarithm), write 2 [approximation]

     ) = 87

     write(1, "\nCurrent lib is 1\n\n", 19

     Current lib is 1



     )  = 19

     read(0, 1 2000

     "1 2000\n", 1024)               = 7

     read(0, 1 3 4

     "1 3 4\n", 1024)                = 6

     write(1, "\n", 1

     )                       = 1
```

```
     write(1, "Calculation of derivative functi"..., 49Calculation of derivative function
f(x) = cos(x)

     ) = 49

     write(1, "in point 2000.000000 with approx"..., 49in point 2000.000000 with
approximation 1.000000

     ) = 49

     write(1, "by formula f'(x) = (f(A + deltaX"..., 62by formula f'(x) = (f(A + deltaX) –
f(A-deltaX))/(2*deltaX)

     ) = 62

     write(1, "cos(A) = -0.367526\n", 19cos(A) = -0.367526

     )    = 19

     write(1, "Answer: -0.782579\n", 18Answer: -0.782579

     )     = 18

     write(1, "\nWrite:\n", 8

     Write:

     )               = 8

     write(1, " [command] [arg1] ... [argN]\n", 29 [command] [arg1] ... [argN]

     ) = 29

     write(1, "\n", 1

     )                       = 1

     write(1, "If you want to change methods of"..., 54If you want to change methods of
calculation, write 0

     ) = 54

     write(1, "\n", 1

     )                       = 1

     write(1, "If you want to take derivation o"..., 73If you want to take derivation of
f(x) = cos(x), write 1 [point] [delta]

     ) = 73

     write(1, "\n", 1

     )                       = 1

     write(1, "If you want to calculate number "..., 87If you want to calculate number e
(base of natural logarithm), write 2 [approximation]

     ) = 87

     write(1, "\nCurrent lib is 1\n\n", 19

     Current lib is 1



     )  = 19

     write(1, "wrong command\n", 14wrong command
```

```
)         = 14

write(1, "\nWrite:\n", 8

Write:

)               = 8

write(1, " [command] [arg1] ... [argN]\n", 29 [command] [arg1] ... [argN]

) = 29

write(1, "\n", 1

)                       = 1

write(1, "If you want to change methods of"..., 54If you want to change methods of
calculation, write 0

) = 54

write(1, "\n", 1

)                       = 1

write(1, "If you want to take derivation o"..., 73If you want to take derivation of
f(x) = cos(x), write 1 [point] [delta]

) = 73

write(1, "\n", 1

)                       = 1

write(1, "If you want to calculate number "..., 87If you want to calculate number e
(base of natural logarithm), write 2 [approximation]

) = 87

write(1, "\nCurrent lib is 1\n\n", 19

Current lib is 1



)  = 19

write(1, "wrong command\n", 14wrong command

)         = 14

write(1, "\nWrite:\n", 8

Write:

)               = 8

write(1, " [command] [arg1] ... [argN]\n", 29 [command] [arg1] ... [argN]

) = 29

write(1, "\n", 1

)                       = 1

write(1, "If you want to change methods of"..., 54If you want to change methods of
calculation, write 0

) = 54
```

```
     write(1, "\n", 1

     )                       = 1

     write(1, "If you want to take derivation o"..., 73If you want to take derivation of
f(x) = cos(x), write 1 [point] [delta]

     ) = 73

     write(1, "\n", 1

     )                       = 1

     write(1, "If you want to calculate number "..., 87If you want to calculate number e
(base of natural logarithm), write 2 [approximation]

     ) = 87

     write(1, "\nCurrent lib is 1\n\n", 19

     Current lib is 1



     )  = 19

     read(0, 3

     "3\n", 1024)                    = 2

     write(1, "wrong command\n", 14wrong command

     )         = 14

     write(1, "\nWrite:\n", 8

     Write:

     )               = 8

     write(1, " [command] [arg1] ... [argN]\n", 29 [command] [arg1] ... [argN]

     ) = 29

     write(1, "\n", 1

     )                       = 1

     write(1, "If you want to change methods of"..., 54If you want to change methods of
calculation, write 0

     ) = 54

     write(1, "\n", 1

     )                       = 1

     write(1, "If you want to take derivation o"..., 73If you want to take derivation of
f(x) = cos(x), write 1 [point] [delta]

     ) = 73

     write(1, "\n", 1

     )                       = 1

     write(1, "If you want to calculate number "..., 87If you want to calculate number e
(base of natural logarithm), write 2 [approximation]

     ) = 87
```

```
write(1, "\nCurrent lib is 1\n\n", 19
Current lib is 1


)  = 19


  +++ exited with 0 +++
```

Laba_5-7:

katya@katya:~/MAI_2/OS/github/OS_MAI/lab5-7$ strace -f -e trace=\!brk,clock_nanosleep,mmap,mprotect,munmap -owrite-simple3.log ./control
create 1 -1
OK: 423891
create 2 -1
OK: 423918
exec 1 start
Ok: 1, start timer
exec 2 start
Ok: 2, start timer
heartbeat
OK: 1 2
create 3 2
OK: 424240
exec 1 stop
Ok: 1, stop timer
exec 1 time
Ok: 1, time is 24.721000
exec 2 stop
Ok: 2, stop timer
exec 2 time
Ok: 2, time is 27.183000
heartbeat
OK: 1 2 3
kill 2
OK
heartbeat
OK: 1
kill 1
OK
exit

write-simple3.log:

Пояснения:

sendto - отправление сообщения на сокет

recvmsg - получение сообщения с сокета

socket - создать конечную точку для связи

setsockopt() - set the socket options

bind() - bind a name to a socket

listen() - network listener daemon

getsockname() - get socket name

epoll_ctl - интерфейс управления описателями epoll (очень полезная штука, которая позволяет отложить реакцию на событие и продолжить ждать остальные события)

poll - input/output multiplexing (мультиплексирование — уплотнение канала, то есть передача нескольких потоков данных с меньшей скоростью по одному каналу)

423819 execve("./control", ["./control"], 0x7fff129cd840 /* 46 vars */) = 0

423819 arch_prctl(0x3001 /* ARCH_??? */, 0x7ffffb36a440) = -1 EINVAL (Недопустимый аргумент)

423819 access("/etc/ld.so.preload", R_OK) = -1 ENOENT (Нет такого файла или каталога)

423819 openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC) = 3

423819 newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=121023, ...}, AT_EMPTY_PATH) = 0

423819 close(3) = 0

423819 openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libzmq.so.5", O_RDONLY|O_CLOEXEC) = 3

423819 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

423819 newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=639000, ...}, AT_EMPTY_PATH) = 0

423819 close(3) = 0

…

423819 <... epoll_ctl resumed>) = 0

423891 <... read resumed>"\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

423892 prctl(PR_SET_NAME, "ZMQbg/Reaper" <unfinished ...>

423891 newfstatat(3, "", <unfinished ...>

423892 <... prctl resumed>) = 0

423891 <... newfstatat resumed>{st_mode=S_IFREG|0644, st_size=639000, ...}, AT_EMPTY_PATH) = 0

423892 epoll_wait(5, <unfinished ...>

423819 rt_sigprocmask(SIG_BLOCK, ~[], [], 8) = 0

423819 clone3({flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, child_tid=0x7f856f2b7990, parent_tid=0x7f856f2b7990, exit_signal=0, stack=0x7f856eab7000, stack_size=0x7ffd40, tls=0x7f856f2b76c0} => {parent_tid=[423893]}, 88) = 423893

423893 rseq(0x7f856f2b7fe0, 0x20, 0, 0x53053053 <unfinished ...>

423819 rt_sigprocmask(SIG_SETMASK, [], <unfinished ...>

423893 <... rseq resumed>) = 0

423819 <... rt_sigprocmask resumed>NULL, 8) = 0

423819 getpid(<unfinished ...>

423893 <... sched_getscheduler resumed>) = 0 (SCHED_OTHER)

423819 <... getpid resumed>) = 423819

423891 newfstatat(3, "", <unfinished ...>

423819 poll([{fd=8, events=POLLIN}], 1, 0 <unfinished ...>

423893 sched_setscheduler(423893, SCHED_OTHER, [0] <unfinished ...>

423819 <... poll resumed>) = 0 (Timeout)

423891 <... newfstatat resumed>{st_mode=S_IFREG|0644, st_size=2522552, ...}, AT_EMPTY_PATH) = 0

423893 <... sched_setscheduler resumed>) = 0

423819 socket(AF_NETLINK, SOCK_RAW|SOCK_CLOEXEC, NETLINK_ROUTE <unfinished ...>

423893 prctl(PR_SET_NAME, "ZMQbg/IO/0" <unfinished ...>

423819 <... socket resumed>) = 9

423893 <... prctl resumed>) = 0

423819 bind(9, {sa_family=AF_NETLINK, nl_pid=0, nl_groups=00000000}, 12 <unfinished ...>

423893 epoll_wait(7, <unfinished ...>

423819 <... bind resumed>) = 0

423819 getsockname(9, {sa_family=AF_NETLINK, nl_pid=423819, nl_groups=00000000}, [12]) = 0

423819 sendto(9, [{nlmsg_len=20, nlmsg_type=RTM_GETLINK, nlmsg_flags=NLM_F_REQUEST|NLM_F_DUMP, nlmsg_seq=1707990386, nlmsg_pid=0}, {ifi_family=AF_UNSPEC, ...}], 20, 0, {sa_family=AF_NETLINK, nl_pid=0, nl_groups=00000000}, 12) = 20

423819 recvmsg(9, <unfinished ...>

423891 close(3 <unfinished ...>

423819 <... recvmsg resumed>{msg_name={sa_family=AF_NETLINK, nl_pid=0, nl_groups=00000000}, msg_namelen=12, msg_iov=[{iov_base=[[{nlmsg_len=1404, nlmsg_type=RTM_NEWLINK, nlmsg_flags=NLM_F_MULTI, nlmsg_seq=1707990386, nlmsg_pid=423819}, {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], [{nla_len=5, nla_type=IFLA_OPERSTATE}, 0], [{nla_len=5, nla_type=IFLA_LINKMODE}, 0], [{nla_len=8, nla_type=IFLA_MTU}, 65536], [{nla_len=8, nla_type=IFLA_MIN_MTU}, 0], [{nla_len=8, nla_type=IFLA_MAX_MTU}, 0], [{nla_len=8, nla_type=IFLA_GROUP}, 0], [{nla_len=8, nla_type=IFLA_PROMISCUITY}, 0], [{nla_len=8, nla_type=IFLA_ALLMULTI}, 0], [{nla_len=8, nla_type=IFLA_NUM_TX_QUEUES}, 1], [{nla_len=8, nla_type=IFLA_GSO_MAX_SEGS}, 65535], [{nla_len=8, nla_type=IFLA_GSO_MAX_SIZE}, 65536], [{nla_len=8, nla_type=IFLA_GRO_MAX_SIZE}, 65536], [{nla_len=8, nla_type=IFLA_TSO_MAX_SIZE}, 524280], [{nla_len=8, nla_type=IFLA_TSO_MAX_SEGS}, 65535], [{nla_len=8, nla_type=IFLA_NUM_RX_QUEUES}, 1], [{nla_len=5, nla_type=IFLA_CARRIER}, 1], [{nla_len=12, nla_type=IFLA_QDISC}, "noqueue"], [{nla_len=8, nla_type=IFLA_CARRIER_CHANGES}, 0], [{nla_len=8, nla_type=IFLA_CARRIER_UP_COUNT}, 0], [{nla_len=8, nla_type=IFLA_CARRIER_DOWN_COUNT}, 0], [{nla_len=5, nla_type=IFLA_PROTO_DOWN}, 0], [{nla_len=36, nla_type=IFLA_MAP}, {mem_start=0, mem_end=0, base_addr=0, irq=0, dma=0, port=0}], [{nla_len=10, nla_type=IFLA_ADDRESS}, 00:00:00:00:00:00],

…

423819 socket(AF_INET, SOCK_STREAM|SOCK_CLOEXEC, IPPROTO_TCP) = 9

423819 setsockopt(9, SOL_SOCKET, SO_REUSEADDR, [1], 4 <unfinished ...>

423891 close(3 <unfinished ...>

423819 <... setsockopt resumed>) = 0

423891 <... close resumed>) = 0

423819 bind(9, {sa_family=AF_INET, sin_port=htons(6061), sin_addr=inet_addr("127.0.0.1")}, 16 <unfinished ...>

423891 openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libc.so.6", O_RDONLY|O_CLOEXEC <unfinished ...>

423819 <... bind resumed>) = 0

423819 listen(9, 100 <unfinished ...>

423891 <... openat resumed>) = 3

423819 <... listen resumed>) = 0

423891 read(3, <unfinished ...>

…

423893 +++ exited with 0 +++

423892 +++ exited with 0 +++

423819 +++ exited with 0 +++

Протокол работы программы

Тестирование:

Вывод

Strace местами непонятная утилита, но если разобраться, то она наверное полезная.