Московский авиационный институт (национальный исследовательский университет)

Институт №8 «Информационные технологии и прикладная математика»

Кафедра 806 «Вычислительная математика и программирование» Дисциплина «Операционные системы»

Лабораторная работа №1

Тема: Диагностика работы ПО

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Дата:

Оценка:

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Постановка задачи

При выполнении последующих лабораторных работ 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 должен содержать краткую сводку по исследованию последующих ЛР.

Протокол исполнения

ЛР2

Программа из данной лабораторной работы использует вызовы create для создания файла, write для записи в файл, а также вызов pipe для создания файловых дескрипторов и clone для создания дочерних процессов

strace:

strace ./main < 1.t > stracelab2.txt

execve("./main", ["./main"], 0x7fff2f094970 /* 67 vars */) = 0

brk(NULL) = 0x55e9ccf32000

arch_prctl(0x3001 /* ARCH_??? */, 0x7ffddb9bc250) = -1 EINVAL (Недопустимый аргумент)

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

fstat(3, {st_mode=S_IFREG|0644, st_size=118993, ...}) = 0

mmap(NULL, 118993, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7fe1bf1c8000

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\0\360q\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\20\0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0", 32, 848) = 32

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\363\377?\332\200\270\27\304d\245n\355Y\377\t\334"..., 68, 880) = 68

fstat(3, {st_mode=S_IFREG|0755, st_size=2029224, ...}) = 0

mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7fe1bf1c6000

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\20\0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0", 32, 848) =
32
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\363\377?
\332\200\270\27\304d\245n\355Y\377\t\334"..., 68, 880) = 68
mmap(NULL, 2036952, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) =
0x7fe1befd4000
mprotect(0x7fe1beff9000, 1847296, PROT_NONE) = 0
mmap(0x7fe1beff9000, 1540096, PROT_READ|PROT_EXEC, MAP_PRIVATE|
MAP_FIXED|MAP_DENYWRITE, 3, 0x25000) = 0x7fe1beff9000
mmap(0x7fe1bf171000, 303104, PROT_READ, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x19d000) = 0x7fe1bf171000
mmap(0x7fe1bf1bc000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|
MAP_FIXED|MAP_DENYWRITE, 3, 0x1e7000) = 0x7fe1bf1bc000
mmap(0x7fe1bf1c2000, 13528, PROT_READ|PROT_WRITE, MAP_PRIVATE|
MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7fe1bf1c2000
close(3)                                = 0
arch_prctl(ARCH_SET_FS, 0x7fe1bf1c7540) = 0
mprotect(0x7fe1bf1bc000, 12288, PROT_READ) = 0
mprotect(0x55e9cc42c000, 4096, PROT_READ) = 0
mprotect(0x7fe1bf213000, 4096, PROT_READ) = 0
munmap(0x7fe1bf1c8000, 118993)          = 0
fstat(0, {st_mode=S_IFREG|0664, st_size=91, ...}) = 0
brk(NULL)                               = 0x55e9ccf32000
brk(0x55e9ccf53000)                     = 0x55e9ccf53000
read(0, "1.txt\n2.txt\nabsde\nbcre\nce\ndr\nee\n"..., 4096) = 91
creat("1.txt", 0600)                    = 3
creat("2.txt", 0600)                    = 4
pipe([5, 6])                            = 0
pipe([7, 8])                            = 0
clone(child_stack=NULL, flags=CLONE_CHILD_CLEARTID|CLONE_CHILD_SETTID|
SIGCHLD, child_tidptr=0x7fe1bf1c7810) = 50362
clone(child_stack=NULL, flags=CLONE_CHILD_CLEARTID|CLONE_CHILD_SETTID|
SIGCHLD, child_tidptr=0x7fe1bf1c7810) = 50363
close(5)                                = 0
close(7)                                = 0
write(8, "absde\n", 6)                  = 6
write(6, "bcre\n", 5)                   = 5
write(8, "ce\n", 3)                     = 3
```

```
write(6, "dr\n", 3)                     = 3
write(6, "ee\n", 3)                     = 3
write(6, "123dfg\n", 7)                 = 7
write(8, "asdf\n", 5)                   = 5
write(6, "lkjj\n", 5)                   = 5
write(6, "dffgh\n", 6)                  = 6
write(8, "345\n", 4)                    = 4
write(6, "absde\n", 6)                  = 6
write(6, "bcreaaaa\n", 9)               = 9
write(6, "ceyyy\n", 6)                  = 6
write(6, "druio\n", 6)                  = 6
write(6, "eeoo\n", 5)                   = 5
read(0, "", 4096)                       = 0
close(6)                                = 0
--- SIGCHLD {si_signo=SIGCHLD, si_code=CLD_EXITED, si_pid=50362, si_uid=1000,
si_status=0, si_utime=0, si_stime=0} ---
close(8)                                = 0
--- SIGCHLD {si_signo=SIGCHLD, si_code=CLD_EXITED, si_pid=50363, si_uid=1000,
si_status=0, si_utime=0, si_stime=0} ---
close(4)                                = 0
exit_group(0)                           = ?
+++ exited with 0 +++
```

ЛР3

Программа из данной лабораторной работы использует вызов write для записи в файл, а также вызов clone для создания дочерних процессов и вызов clock_gettime при подсчете времени.

strace:

```
strace ./lab3 4 < 1.txt
execve("./lab3", ["./lab3", "4"], 0x7ffc7cbf57c8 /* 67 vars */) = 0
brk(NULL)                               = 0x55f2348b2000
arch_prctl(0x3001 /* ARCH_??? */, 0x7ffe7d12b3b0) = -1 EINVAL (Недопустимый аргумент)
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
fstat(3, {st_mode=S_IFREG|0644, st_size=118993, ...}) = 0
mmap(NULL, 118993, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7fbf85741000
close(3)                                = 0
```

```
openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libpthread.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\220\201\0\0\0\0\0\0"..., 832) = 832
pread64(3,
"\4\0\0\0\24\0\0\0\3\0\0\0GNU\0O\305\3743\364B\2216\244\224\306@\261\23\327o"..., 68, 824) =
68
fstat(3, {st_mode=S_IFREG|0755, st_size=157224, ...}) = 0
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0)
= 0x7fbf8573f000
pread64(3,
"\4\0\0\0\24\0\0\0\3\0\0\0GNU\0O\305\3743\364B\2216\244\224\306@\261\23\327o"..., 68, 824) =
68
mmap(NULL, 140408, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) =
0x7fbf8571c000
mmap(0x7fbf85723000, 69632, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x7000) = 0x7fbf85723000
mmap(0x7fbf85734000, 20480, PROT_READ, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x18000) = 0x7fbf85734000
mmap(0x7fbf85739000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x1c000) = 0x7fbf85739000
mmap(0x7fbf8573b000, 13432, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_ANONYMOUS, -1, 0) = 0x7fbf8573b000
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\0\360q\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\20\0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0", 32, 848) = 32
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\363\377?
\332\200\270\27\304d\245n\355Y\377\t\334"..., 68, 880) = 68
fstat(3, {st_mode=S_IFREG|0755, st_size=2029224, ...}) = 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
pread64(3, "\4\0\0\0\20\0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0", 32, 848) = 32
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\363\377?
\332\200\270\27\304d\245n\355Y\377\t\334"..., 68, 880) = 68
mmap(NULL, 2036952, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) =
0x7fbf8552a000
mprotect(0x7fbf8554f000, 1847296, PROT_NONE) = 0
mmap(0x7fbf8554f000, 1540096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x25000) = 0x7fbf8554f000
mmap(0x7fbf856c7000, 303104, PROT_READ, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x19d000) = 0x7fbf856c7000
```

mmap(0x7fbf85712000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1e7000) = 0x7fbf85712000

mmap(0x7fbf85718000, 13528, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7fbf85718000

close(3) = 0

mmap(NULL, 12288, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7fbf85527000

arch_prctl(ARCH_SET_FS, 0x7fbf85527740) = 0

mprotect(0x7fbf85712000, 12288, PROT_READ) = 0

mprotect(0x7fbf85739000, 4096, PROT_READ) = 0

mprotect(0x55f23327e000, 4096, PROT_READ) = 0

mprotect(0x7fbf8578c000, 4096, PROT_READ) = 0

munmap(0x7fbf85741000, 118993) = 0

set_tid_address(0x7fbf85527a10) = 52910

set_robust_list(0x7fbf85527a20, 24) = 0

rt_sigaction(SIGRTMIN, {sa_handler=0x7fbf85723bf0, sa_mask=[], sa_flags=SA_RESTORER|SA_SIGINFO, sa_restorer=0x7fbf857313c0}, NULL, 8) = 0

rt_sigaction(SIGRT_1, {sa_handler=0x7fbf85723c90, sa_mask=[], sa_flags=SA_RESTORER|SA_RESTART|SA_SIGINFO, sa_restorer=0x7fbf857313c0}, NULL, 8) = 0

rt_sigprocmask(SIG_UNBLOCK, [RTMIN RT_1], NULL, 8) = 0

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

fstat(0, {st_mode=S_IFREG|0664, st_size=105, ...}) = 0

brk(NULL) = 0x55f2348b2000

brk(0x55f2348d3000) = 0x55f2348d3000

read(0, "5\n31 \n 4 86 57 71 21 \n 65 1"..., 4096) = 105

clock_gettime(CLOCK_PROCESS_CPUTIME_ID, {tv_sec=0, tv_nsec=1502741}) = 0

mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|MAP_STACK, -1, 0) = 0x7fbf84d26000

mprotect(0x7fbf84d27000, 8388608, PROT_READ|PROT_WRITE) = 0

clone(child_stack=0x7fbf85525fb0, flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tid=[52911], tls=0x7fbf85526700, child_tidptr=0x7fbf855269d0) = 52911

mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|MAP_STACK, -1, 0) = 0x7fbf84525000

mprotect(0x7fbf84526000, 8388608, PROT_READ|PROT_WRITE) = 0

clone(child_stack=0x7fbf84d24fb0, flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tid=[52912], tls=0x7fbf84d25700, child_tidptr=0x7fbf84d259d0) = 52912

mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|MAP_STACK, -1, 0) = 0x7fbf83d24000

mprotect(0x7fbf83d25000, 8388608, PROT_READ|PROT_WRITE) = 0

clone(child_stack=0x7fbf84523fb0, flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tid=[52913], tls=0x7fbf84524700, child_tidptr=0x7fbf845249d0) = 52913

mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|MAP_STACK, -1, 0) = 0x7fbf83523000

mprotect(0x7fbf83524000, 8388608, PROT_READ|PROT_WRITE) = 0

clone(child_stack=0x7fbf83d22fb0, flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tid=[52914], tls=0x7fbf83d23700, child_tidptr=0x7fbf83d239d0) = 52914

clone(child_stack=0x7fbf83d22fb0, flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tid=[52915], tls=0x7fbf83d23700, child_tidptr=0x7fbf83d239d0) = 52915

clone(child_stack=0x7fbf84523fb0, flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tid=[52916], tls=0x7fbf84524700, child_tidptr=0x7fbf845249d0) = 52916

clone(child_stack=0x7fbf84d24fb0, flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tid=[52917], tls=0x7fbf84d25700, child_tidptr=0x7fbf84d259d0) = 52917

clone(child_stack=0x7fbf85525fb0, flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tid=[52918], tls=0x7fbf85526700, child_tidptr=0x7fbf855269d0) = 52918

futex(0x7fbf84d259d0, FUTEX_WAIT, 52917, NULL) = 0

clone(child_stack=0x7fbf85525fb0, flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tid=[52919], tls=0x7fbf85526700, child_tidptr=0x7fbf855269d0) = 52919

clone(child_stack=0x7fbf84d24fb0, flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tid=[52920], tls=0x7fbf84d25700, child_tidptr=0x7fbf84d259d0) = 52920

clone(child_stack=0x7fbf84523fb0, flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tid=[52921], tls=0x7fbf84524700, child_tidptr=0x7fbf845249d0) = 52921

clone(child_stack=0x7fbf83d22fb0, flags=CLONE_VM|CLONE_FS|CLONE_FILES|
CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|
CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tid=[52922],
tls=0x7fbf83d23700, child_tidptr=0x7fbf83d239d0) = 52922

clone(child_stack=0x7fbf83d22fb0, flags=CLONE_VM|CLONE_FS|CLONE_FILES|
CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|
CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tid=[52923],
tls=0x7fbf83d23700, child_tidptr=0x7fbf83d239d0) = 52923

clone(child_stack=0x7fbf84523fb0, flags=CLONE_VM|CLONE_FS|CLONE_FILES|
CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|
CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tid=[52924],
tls=0x7fbf84524700, child_tidptr=0x7fbf845249d0) = 52924

clone(child_stack=0x7fbf84d24fb0, flags=CLONE_VM|CLONE_FS|CLONE_FILES|
CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|
CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tid=[52925],
tls=0x7fbf84d25700, child_tidptr=0x7fbf84d259d0) = 52925

clone(child_stack=0x7fbf85525fb0, flags=CLONE_VM|CLONE_FS|CLONE_FILES|
CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|
CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tid=[52926],
tls=0x7fbf85526700, child_tidptr=0x7fbf855269d0) = 52926

clone(child_stack=0x7fbf85525fb0, flags=CLONE_VM|CLONE_FS|CLONE_FILES|
CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|
CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tid=[52927],
tls=0x7fbf85526700, child_tidptr=0x7fbf855269d0) = 52927

clone(child_stack=0x7fbf84d24fb0, flags=CLONE_VM|CLONE_FS|CLONE_FILES|
CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|
CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tid=[52928],
tls=0x7fbf84d25700, child_tidptr=0x7fbf84d259d0) = 52928

clone(child_stack=0x7fbf84523fb0, flags=CLONE_VM|CLONE_FS|CLONE_FILES|
CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|
CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tid=[52929],
tls=0x7fbf84524700, child_tidptr=0x7fbf845249d0) = 52929

clone(child_stack=0x7fbf83d22fb0, flags=CLONE_VM|CLONE_FS|CLONE_FILES|
CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|
CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tid=[52930],
tls=0x7fbf83d23700, child_tidptr=0x7fbf83d239d0) = 52930

futex(0x7fbf845249d0, FUTEX_WAIT, 52929, NULL) = -1 EAGAIN (Ресурс временно
недоступен)

clock_gettime(CLOCK_PROCESS_CPUTIME_ID, {tv_sec=0, tv_nsec=2542089}) = 0

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

write(1, "Count: 4\n", 10Count: 4

) = 10

write(1, "time: 1040.000000 ms\n", 21time: 1040.000000 ms

) = 21

```
write(1, "\n", 1
)                       = 1
write(1, "Answer:: -1142674134.000000\n", 28Answer:: -1142674134.000000
) = 28
lseek(0, -2, SEEK_CUR)                  = 103
exit_group(0)                           = ?
+++ exited with 0 +++
```

ЛР4

Программа из данной лабораторной работы использует вызов create для создания файла, вызов clone для создания дочерних процессов, вызов openat и futex для работы с мьютексами, ftruncate для установления длины файла, на который ссылается файловый дескриптор

strace:

```
strace ./main < 1.t > stracelab4.txt
execve("./main", ["./main"], 0x7fff185f66c0 /* 67 vars */) = 0
brk(NULL)                               = 0x56305a70d000
arch_prctl(0x3001 /* ARCH_??? */, 0x7ffc94afaf60) = -1 EINVAL (Недопустимый аргумент)
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
fstat(3, {st_mode=S_IFREG|0644, st_size=118993, ...}) = 0
mmap(NULL, 118993, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7ff05e653000
close(3)                                = 0
openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libpthread.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\220\201\0\0\0\0\0\0"..., 832) = 832
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0O\305\3743\364B\2216\244\224\306@\261\23\327o"..., 68, 824) = 68
fstat(3, {st_mode=S_IFREG|0755, st_size=157224, ...}) = 0
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7ff05e651000
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0O\305\3743\364B\2216\244\224\306@\261\23\327o"..., 68, 824) = 68
mmap(NULL, 140408, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7ff05e62e000
mmap(0x7ff05e635000, 69632, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x7000) = 0x7ff05e635000
mmap(0x7ff05e646000, 20480, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x18000) = 0x7ff05e646000
mmap(0x7ff05e64b000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1c000) = 0x7ff05e64b000
mmap(0x7ff05e64d000, 13432, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7ff05e64d000
close(3)                                = 0
openat(AT_FDCWD, "/lib/x86_64-linux-gnu/librt.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 7\0\0\0\0\0\0"..., 832) = 832
fstat(3, {st_mode=S_IFREG|0644, st_size=40040, ...}) = 0
mmap(NULL, 44000, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7ff05e623000
mprotect(0x7ff05e626000, 24576, PROT_NONE) = 0
```

mmap(0x7ff05e626000, 16384, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x3000) = 0x7ff05e626000

mmap(0x7ff05e62a000, 4096, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x7000) = 0x7ff05e62a000

mmap(0x7ff05e62c000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x8000) = 0x7ff05e62c000

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\0\360q\2\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"..., 784, 64) = 784

pread64(3, "\4\0\0\0\20\0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0", 32, 848) = 32

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\363\377?\332\200\270\27\304d\245n\355Y\377\t\334"..., 68, 880) = 68

fstat(3, {st_mode=S_IFREG|0755, st_size=2029224, ...}) = 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"..., 784, 64) = 784

pread64(3, "\4\0\0\0\20\0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0", 32, 848) = 32

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\363\377?\332\200\270\27\304d\245n\355Y\377\t\334"..., 68, 880) = 68

mmap(NULL, 2036952, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7ff05e431000

mprotect(0x7ff05e456000, 1847296, PROT_NONE) = 0

mmap(0x7ff05e456000, 1540096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x25000) = 0x7ff05e456000

mmap(0x7ff05e5ce000, 303104, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x19d000) = 0x7ff05e5ce000

mmap(0x7ff05e619000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1e7000) = 0x7ff05e619000

mmap(0x7ff05e61f000, 13528, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7ff05e61f000

close(3) = 0

mmap(NULL, 12288, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7ff05e42e000

arch_prctl(ARCH_SET_FS, 0x7ff05e42e740) = 0

mprotect(0x7ff05e619000, 12288, PROT_READ) = 0

mprotect(0x7ff05e64b000, 4096, PROT_READ) = 0

mprotect(0x7ff05e62c000, 4096, PROT_READ) = 0

mprotect(0x563058769000, 4096, PROT_READ) = 0

mprotect(0x7ff05e69e000, 4096, PROT_READ) = 0

munmap(0x7ff05e653000, 118993) = 0

set_tid_address(0x7ff05e42ea10) = 53181

set_robust_list(0x7ff05e42ea20, 24) = 0

rt_sigaction(SIGRTMIN, {sa_handler=0x7ff05e635bf0, sa_mask=[], sa_flags=SA_RESTORER|SA_SIGINFO, sa_restorer=0x7ff05e6433c0}, NULL, 8) = 0

rt_sigaction(SIGRT_1, {sa_handler=0x7ff05e635c90, sa_mask=[], sa_flags=SA_RESTORER|SA_RESTART|SA_SIGINFO, sa_restorer=0x7ff05e6433c0}, NULL, 8) = 0

rt_sigprocmask(SIG_UNBLOCK, [RTMIN RT_1], NULL, 8) = 0

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

fstat(0, {st_mode=S_IFREG|0664, st_size=101, ...}) = 0

brk(NULL) = 0x56305a70d000

brk(0x56305a72e000) = 0x56305a72e000

read(0, "1.txt\n2.txt\n123456789\nasdf\nlkjj\n"..., 4096) = 101

creat("1.txt", 0707) = 3

creat("2.txt", 0707) = 4

statfs("/dev/shm/", {f_type=TMPFS_MAGIC, f_bsize=4096, f_blocks=978459, f_bfree=843921, f_bavail=843921, f_files=978459, f_ffree=978278, f_fsid={val=[0, 0]}, f_namelen=255, f_frsize=4096, f_flags=ST_VALID|ST_NOSUID|ST_NODEV}) = 0

futex(0x7ff05e650390, FUTEX_WAKE_PRIVATE, 2147483647) = 0

openat(AT_FDCWD, "/dev/shm/inout", O_RDWR|O_CREAT|O_NOFOLLOW|O_CLOEXEC, 0707) = 5

openat(AT_FDCWD, "/dev/shm/mutex1", O_RDWR|O_CREAT|O_NOFOLLOW|O_CLOEXEC, 0707) = 6

openat(AT_FDCWD, "/dev/shm/mutex2", O_RDWR|O_CREAT|O_NOFOLLOW|O_CLOEXEC, 0707) = 7

openat(AT_FDCWD, "/dev/shm/mutex3", O_RDWR|O_CREAT|O_NOFOLLOW|O_CLOEXEC, 0707) = 8

ftruncate(5, 1) = 0

ftruncate(6, 40) = 0

ftruncate(7, 40) = 0

ftruncate(8, 40) = 0

mmap(NULL, 1, PROT_READ|PROT_WRITE, MAP_SHARED, 5, 0) = 0x7ff05e69d000

mmap(NULL, 40, PROT_READ|PROT_WRITE, MAP_SHARED, 6, 0) = 0x7ff05e670000

mmap(NULL, 40, PROT_READ|PROT_WRITE, MAP_SHARED, 7, 0) = 0x7ff05e66f000

mmap(NULL, 40, PROT_READ|PROT_WRITE, MAP_SHARED, 8, 0) = 0x7ff05e66e000

clone(child_stack=NULL, flags=CLONE_CHILD_CLEARTID|CLONE_CHILD_SETTID|SIGCHLD, child_tidptr=0x7ff05e42ea10) = 53184

clone(child_stack=NULL, flags=CLONE_CHILD_CLEARTID|CLONE_CHILD_SETTID|SIGCHLD, child_tidptr=0x7ff05e42ea10) = 53185

//далее производится работа с мьютексами.

futex(0x7ff05e66e000, FUTEX_WAIT, 2, NULL) = 0

futex(0x7ff05e66e000, FUTEX_WAIT, 2, NULL) = 0

futex(0x7ff05e66f000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e66e000, FUTEX_WAIT, 2, NULL) = 0

futex(0x7ff05e66f000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e66f000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e66f000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e66f000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e66f000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e66f000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e66e000, FUTEX_WAIT, 2, NULL) = 0

futex(0x7ff05e66f000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e66f000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e66f000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e66f000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e66f000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e66f000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e66f000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1

futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1

```
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e66f000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e66f000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e66f000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e66f000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e66f000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e66f000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e66f000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e66f000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e66f000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e66e000, FUTEX_WAIT, 2, NULL) = 0
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1)    = 1
```

futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1
futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1
read(0, "", 4096) = 0
futex(0x7ff05e670000, FUTEX_WAKE, 1) = 1
futex(0x7ff05e66f000, FUTEX_WAKE, 1) = 1
--- SIGCHLD {si_signo=SIGCHLD, si_code=CLD_EXITED, si_pid=53184, si_uid=1000, si_status=0, si_utime=0, si_stime=0} ---
munmap(0x7ff05e69d000, 1) = 0
--- SIGCHLD {si_signo=SIGCHLD, si_code=CLD_EXITED, si_pid=53185, si_uid=1000, si_status=0, si_utime=0, si_stime=0} ---
munmap(0x7ff05e670000, 40) = 0
munmap(0x7ff05e66f000, 40) = 0
munmap(0x7ff05e66e000, 40) = 0
close(3) = 0
close(4) = 0
exit_group(0) = ?
+++ exited with 0 +++

ЛР5

Программа из данной лабораторной работы использует вызов openat для работы с динамическими библиотеками и вызов write для записи данных в файл.

strace:

```
strace ./rez1 < 1.txt
execve("./rez1", ["./rez1"], 0x7fffe16851c0 /* 67 vars */) = 0
brk(NULL)                               = 0x563a138e8000
arch_prctl(0x3001 /* ARCH_??? */, 0x7ffe12918780) = -1 EINVAL (Недопустимый аргумент)
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
fstat(3, {st_mode=S_IFREG|0644, st_size=118993, ...}) = 0
mmap(NULL, 118993, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7fc051b02000
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\0\360q\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\20\0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0", 32, 848) = 32
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\363\377?\332\200\270\27\304d\245n\355Y\377\t\334"..., 68, 880) = 68
fstat(3, {st_mode=S_IFREG|0755, st_size=2029224, ...}) = 0
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7fc051b00000
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\20\0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0", 32, 848) = 32
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\363\377?\332\200\270\27\304d\245n\355Y\377\t\334"..., 68, 880) = 68
mmap(NULL, 2036952, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fc05190e000
mprotect(0x7fc051933000, 1847296, PROT_NONE) = 0
mmap(0x7fc051933000, 1540096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x25000) = 0x7fc051933000
mmap(0x7fc051aab000, 303104, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x19d000) =
0x7fc051aab000
mmap(0x7fc051af6000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x1e7000) = 0x7fc051af6000
mmap(0x7fc051afc000, 13528, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x7fc051afc000
close(3)                                = 0
arch_prctl(ARCH_SET_FS, 0x7fc051b01540) = 0
mprotect(0x7fc051af6000, 12288, PROT_READ) = 0
mprotect(0x563a11e12000, 4096, PROT_READ) = 0
mprotect(0x7fc051b4d000, 4096, PROT_READ) = 0
munmap(0x7fc051b02000, 118993)          = 0
fstat(0, {st_mode=S_IFREG|0664, st_size=35, ...}) = 0
brk(NULL)                               = 0x563a138e8000
brk(0x563a13909000)                     = 0x563a13909000
read(0, "1 2 100\n2 12  \n1 3 30\n1 35 100\n2"..., 4096) = 35
fstat(1, {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0), ...}) = 0
write(1, "25\n", 325
)                 = 3
write(1, "00000000000000000000000000000000"...,
650000000000000000000000000000000000000000000000000000000000000001100
) = 65
write(1, "9\n", 29
)                 = 2
write(1, "14\n", 314
)                 = 3
read(0, "", 4096)                       = 0
write(1, "00000000000000000000000000000000"...,
650000000000000000000000000000000000000000000000000000000000000100011
) = 65
exit_group(0)                           = ?
+++ exited with 0 +++
strace ./rez2 < 1.txt
execve("./rez2", ["./rez2"], 0x7ffe8b0885d0 /* 67 vars */) = 0
brk(NULL)                               = 0x55678d996000
arch_prctl(0x3001 /* ARCH_??? */, 0x7fff02287b00) = -1 EINVAL (Недопустимый аргумент)
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
fstat(3, {st_mode=S_IFREG|0644, st_size=118993, ...}) = 0
mmap(NULL, 118993, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7f15c4efa000
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\0\360q\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\20\0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0", 32, 848) = 32
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\363\377?\332\200\270\27\304d\245n\355Y\377\t\334"..., 68, 880) = 68
fstat(3, {st_mode=S_IFREG|0755, st_size=2029224, ...}) = 0
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7f15c4ef8000
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\20\0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0", 32, 848) = 32
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\363\377?\332\200\270\27\304d\245n\355Y\377\t\334"..., 68, 880) = 68
mmap(NULL, 2036952, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f15c4d06000
mprotect(0x7f15c4d2b000, 1847296, PROT_NONE) = 0
mmap(0x7f15c4d2b000, 1540096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x25000) = 0x7f15c4d2b000
```

```
mmap(0x7f15c4ea3000, 303104, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x19d000) =
0x7f15c4ea3000
mmap(0x7f15c4eee000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x1e7000) = 0x7f15c4eee000
mmap(0x7f15c4ef4000, 13528, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x7f15c4ef4000
close(3)                                = 0
arch_prctl(ARCH_SET_FS, 0x7f15c4ef9540) = 0
mprotect(0x7f15c4eee000, 12288, PROT_READ) = 0
mprotect(0x55678d619000, 4096, PROT_READ) = 0
mprotect(0x7f15c4f45000, 4096, PROT_READ) = 0
munmap(0x7f15c4efa000, 118993)          = 0
fstat(0, {st_mode=S_IFREG|0664, st_size=35, ...}) = 0
brk(NULL)                               = 0x55678d996000
brk(0x55678d9b7000)                     = 0x55678d9b7000
read(0, "1 2 100\n2 12  \n1 3 30\n1 35 100\n2"..., 4096) = 35
fstat(1, {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0), ...}) = 0
write(1, "25\n", 325
)                  = 3
write(1, "000000000000000000000000000000000"..., 490000000000000000000000000000000000000000000000000110
) = 49
write(1, "9\n", 29
)                  = 2
write(1, "14\n", 314
)                  = 3
read(0, "", 4096)                       = 0
write(1, "000000000000000000000000000000000"..., 490000000000000000000000000000000000000000000000001022
) = 49
exit_group(0)                           = ?
+++ exited with 0 +++
strace ./rez3 < 2.txt
execve("./rez3", ["./rez3"], 0x7fff0b0c5710 /* 67 vars */) = 0
brk(NULL)                               = 0x56444d206000
arch_prctl(0x3001 /* ARCH_??? */, 0x7ffc9e2a0be0) = -1 EINVAL (Недопустимый аргумент)
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
fstat(3, {st_mode=S_IFREG|0644, st_size=118993, ...}) = 0
mmap(NULL, 118993, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7f810e2fd000
close(3)                                = 0
openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libdl.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 \22\0\0\0\0\0\0"..., 832) = 832
fstat(3, {st_mode=S_IFREG|0644, st_size=18816, ...}) = 0
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7f810e2fb000
mmap(NULL, 20752, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f810e2f5000
mmap(0x7f810e2f6000, 8192, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x1000) = 0x7f810e2f6000
mmap(0x7f810e2f8000, 4096, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x3000) =
0x7f810e2f8000
mmap(0x7f810e2f9000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x3000) = 0x7f810e2f9000
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\0\360q\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\20\0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0", 32, 848) = 32
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\363\377?\332\200\270\27\304d\245n\355Y\377\t\334"..., 68, 880) = 68
fstat(3, {st_mode=S_IFREG|0755, st_size=2029224, ...}) = 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
pread64(3, "\4\0\0\0\20\0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0", 32, 848) = 32
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\363\377?\332\200\270\27\304d\245n\355Y\377\t\334"..., 68, 880) = 68
mmap(NULL, 2036952, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f810e103000
mprotect(0x7f810e128000, 1847296, PROT_NONE) = 0
mmap(0x7f810e128000, 1540096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x25000) = 0x7f810e128000
mmap(0x7f810e2a0000, 303104, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x19d000) =
0x7f810e2a0000
```

```
mmap(0x7f810e2eb000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE,
3, 0x1e7000) = 0x7f810e2eb000
mmap(0x7f810e2f1000, 13528, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS,
-1, 0) = 0x7f810e2f1000
close(3)                                = 0
mmap(NULL, 12288, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7f810e100000
arch_prctl(ARCH_SET_FS, 0x7f810e100740) = 0
mprotect(0x7f810e2eb000, 12288, PROT_READ) = 0
mprotect(0x7f810e2f9000, 4096, PROT_READ) = 0
mprotect(0x56444bc3f000, 4096, PROT_READ) = 0
mprotect(0x7f810e348000, 4096, PROT_READ) = 0
munmap(0x7f810e2fd000, 118993)          = 0
brk(NULL)                               = 0x56444d206000
brk(0x56444d227000)                     = 0x56444d227000
openat(AT_FDCWD, "/home/lera/\320\240\320\260\320\261\320\276\321\207\320\270\320\271
\321\201\321\202\320\276\320\273/lera/5/libim1.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`\20\0\0\0\0\0\0"..., 832) = 832
fstat(3, {st_mode=S_IFREG|0775, st_size=16144, ...}) = 0
mmap(NULL, 16432, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f810e316000
mmap(0x7f810e317000, 4096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x1000) = 0x7f810e317000
mmap(0x7f810e318000, 4096, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x2000) =
0x7f810e318000
mmap(0x7f810e319000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x2000) = 0x7f810e319000
close(3)                                = 0
mprotect(0x7f810e319000, 4096, PROT_READ) = 0
fstat(0, {st_mode=S_IFREG|0664, st_size=37, ...}) = 0
read(0, "1 2 100\n2 12\n0  \n1 3 30\n1 35 100"..., 4096) = 37
fstat(1, {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0), ...}) = 0
write(1, "25\n", 325
)                       = 3
write(1, "00000000000000000000000000000000"...,
650000000000000000000000000000000000000000000000000000000000000001100
) = 65
munmap(0x7f810e316000, 16432)           = 0
openat(AT_FDCWD, "/home/lera/\320\240\320\260\320\261\320\276\321\207\320\270\320\271
\321\201\321\202\320\276\320\273/lera/5/libim2.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\200\20\0\0\0\0\0\0"..., 832) = 832
fstat(3, {st_mode=S_IFREG|0775, st_size=16200, ...}) = 0
mmap(NULL, 16440, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f810e316000
mmap(0x7f810e317000, 4096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x1000) = 0x7f810e317000
mmap(0x7f810e318000, 4096, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x2000) =
0x7f810e318000
mmap(0x7f810e319000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x2000) = 0x7f810e319000
close(3)                                = 0
mprotect(0x7f810e319000, 4096, PROT_READ) = 0
write(1, "9\n", 29
)                       = 2
write(1, "14\n", 314
)                       = 3
read(0, "", 4096)                       = 0
write(1, "00000000000000000000000000000000"..., 490000000000000000000000000000000000000000000001022
) = 49
munmap(0x7f810e316000, 16440)           = 0
exit_group(0)                           = ?
+++ exited with 0 +++
```

ЛР6-8

Программа из данной лабораторной работы использует вызов socket для создания сокета, также системный вызов listen, который устанавливает размер очереди для сокета, системный вызов bind для привязки локального адреса к сокету. Системный вызов poll для ожидания операций от файлового дескриптора, а также системные вызовы clone для создания дочерних процессов и write для записи данных в файл

strace:

```
strace ./server < test2.txt > stracelab6.txt
execve("./server", ["./server"], 0x7fffadc9e0f0 /* 67 vars */) = 0
brk(NULL)                               = 0x556220e4f000
arch_prctl(0x3001 /* ARCH_??? */, 0x7ffd5fdd20b0) = -1 EINVAL (Недопустимый аргумент)
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
fstat(3, {st_mode=S_IFREG|0644, st_size=118993, ...}) = 0
mmap(NULL, 118993, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7f7da6916000
close(3)                                = 0
openat(AT_FDCWD, "/usr/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`z\1\0\0\0\0\0"..., 832) = 832
fstat(3, {st_mode=S_IFREG|0644, st_size=675776, ...}) = 0
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7f7da6914000
mmap(NULL, 678128, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f7da686e000
mmap(0x7f7da6884000, 430080, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x16000) = 0x7f7da6884000
mmap(0x7f7da68ed000, 126976, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x7f000) = 0x7f7da68ed000
mmap(0x7f7da690c000, 32768, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x9d000) = 0x7f7da690c000
close(3)                                = 0
openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libpthread.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\220\201\0\0\0\0\0\0"..., 832) = 832
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0O\305\3743\364B\2216\244\224\306@\261\23\327o"..., 68,
824) = 68
fstat(3, {st_mode=S_IFREG|0755, st_size=157224, ...}) = 0
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0O\305\3743\364B\2216\244\224\306@\261\23\327o"..., 68,
824) = 68
mmap(NULL, 140408, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f7da684b000
mmap(0x7f7da6852000, 69632, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x7000) = 0x7f7da6852000
mmap(0x7f7da6863000, 20480, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x18000) = 0x7f7da6863000
mmap(0x7f7da6868000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x1c000) = 0x7f7da6868000
mmap(0x7f7da686a000, 13432, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_ANONYMOUS, -1, 0) = 0x7f7da686a000
close(3)                                = 0
openat(AT_FDCWD, "/usr/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\240\341\t\0\0\0\0\0"..., 832) = 832
fstat(3, {st_mode=S_IFREG|0644, st_size=1952928, ...}) = 0
mmap(NULL, 1968128, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f7da666a000
mprotect(0x7f7da6700000, 1286144, PROT_NONE) = 0
mmap(0x7f7da6700000, 983040, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x96000) = 0x7f7da6700000
```

```
mmap(0x7f7da67f0000, 299008, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x186000) = 0x7f7da67f0000
mmap(0x7f7da683a000, 57344, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x1cf000) = 0x7f7da683a000
mmap(0x7f7da6848000, 10240, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_ANONYMOUS, -1, 0) = 0x7f7da6848000
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\3405\0\0\0\0\0\0"..., 832) = 832
fstat(3, {st_mode=S_IFREG|0644, st_size=104984, ...}) = 0
mmap(NULL, 107592, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f7da664f000
mmap(0x7f7da6652000, 73728, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x3000) = 0x7f7da6652000
mmap(0x7f7da6664000, 16384, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x15000) = 0x7f7da6664000
mmap(0x7f7da6668000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x18000) = 0x7f7da6668000
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\0\360q\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\20\0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0", 32, 848) = 32
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\363\377?\332\200\270\27\304d\245n\355Y\377\t\334"..., 68,
880) = 68
fstat(3, {st_mode=S_IFREG|0755, st_size=2029224, ...}) = 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
pread64(3, "\4\0\0\0\20\0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0", 32, 848) = 32
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\363\377?\332\200\270\27\304d\245n\355Y\377\t\334"..., 68,
880) = 68
mmap(NULL, 2036952, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f7da645d000
mprotect(0x7f7da6482000, 1847296, PROT_NONE) = 0
mmap(0x7f7da6482000, 1540096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x25000) = 0x7f7da6482000
mmap(0x7f7da65fa000, 303104, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x19d000) = 0x7f7da65fa000
mmap(0x7f7da6645000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x1e7000) = 0x7f7da6645000
mmap(0x7f7da664b000, 13528, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_ANONYMOUS, -1, 0) = 0x7f7da664b000
close(3)                                = 0
openat(AT_FDCWD, "/usr/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\200\302\0\0\0\0\0\0"..., 832) = 832
fstat(3, {st_mode=S_IFREG|0644, st_size=355016, ...}) = 0
mmap(NULL, 357384, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f7da6405000
mmap(0x7f7da6411000, 229376, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0xc000) = 0x7f7da6411000
mmap(0x7f7da6449000, 73728, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x44000) = 0x7f7da6449000
mmap(0x7f7da645b000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x55000) = 0x7f7da645b000
close(3)                                = 0
openat(AT_FDCWD, "/usr/lib/x86_64-linux-gnu/libpgm-5.2.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\240L\0\0\0\0\0\0"..., 832) = 832
fstat(3, {st_mode=S_IFREG|0644, st_size=302056, ...}) = 0
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7f7da6403000
mmap(NULL, 321584, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f7da63b4000
mmap(0x7f7da63b8000, 163840, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x4000) = 0x7f7da63b8000
```

```
mmap(0x7f7da63e0000, 118784, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x2c000) = 0x7f7da63e0000
mmap(0x7f7da63fd000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x48000) = 0x7f7da63fd000
mmap(0x7f7da63ff000, 14384, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_ANONYMOUS, -1, 0) = 0x7f7da63ff000
close(3)                        = 0
openat(AT_FDCWD, "/usr/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\0\257\0\0\0\0\0\0"..., 832) = 832
fstat(3, {st_mode=S_IFREG|0644, st_size=690344, ...}) = 0
mmap(NULL, 1420000, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f7da6259000
mmap(0x7f7da6263000, 421888, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0xa000) = 0x7f7da6263000
mmap(0x7f7da62ca000, 217088, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x71000) = 0x7f7da62ca000
mmap(0x7f7da62ff000, 16384, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0xa5000) = 0x7f7da62ff000
mmap(0x7f7da6303000, 723680, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_ANONYMOUS, -1, 0) = 0x7f7da6303000
close(3)                        = 0
openat(AT_FDCWD, "/usr/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\0P\321\0\0\0\0\0\0"..., 832) = 832
fstat(3, {st_mode=S_IFREG|0644, st_size=309712, ...}) = 0
mmap(NULL, 312128, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f7da620c000
mmap(0x7f7da6217000, 204800, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0xb000) = 0x7f7da6217000
mmap(0x7f7da6249000, 49152, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x3d000) = 0x7f7da6249000
mmap(0x7f7da6255000, 16384, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x48000) = 0x7f7da6255000
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\300\363\0\0\0\0\0\0"..., 832) = 832
fstat(3, {st_mode=S_IFREG|0644, st_size=1369352, ...}) = 0
mmap(NULL, 1368336, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f7da60bd000
mmap(0x7f7da60cc000, 684032, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0xf000) = 0x7f7da60cc000
mmap(0x7f7da6173000, 618496, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0xb6000) = 0x7f7da6173000
mmap(0x7f7da620a000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x14c000) = 0x7f7da620a000
close(3)                        = 0
openat(AT_FDCWD, "/usr/lib/x86_64-linux-gnu/libkrb5.so.3", 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 ?\2\0\0\0\0\0"..., 832) = 832
fstat(3, {st_mode=S_IFREG|0644, st_size=902016, ...}) = 0
mmap(NULL, 904640, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f7da5fe0000
mprotect(0x7f7da6002000, 700416, PROT_NONE) = 0
mmap(0x7f7da6002000, 397312, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x22000) = 0x7f7da6002000
mmap(0x7f7da6063000, 299008, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x83000) = 0x7f7da6063000
mmap(0x7f7da60ad000, 65536, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0xcc000) = 0x7f7da60ad000
close(3)                        = 0
openat(AT_FDCWD, "/usr/lib/x86_64-linux-gnu/libk5crypto.so.3", 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\240D\0\0\0\0\0\0"..., 832) = 832
fstat(3, {st_mode=S_IFREG|0644, st_size=191040, ...}) = 0
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7f7da5fde000
mmap(NULL, 196696, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f7da5fad000
```

```
mprotect(0x7f7da5fb1000, 172032, PROT_NONE) = 0
mmap(0x7f7da5fb1000, 114688, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x4000) = 0x7f7da5fb1000
mmap(0x7f7da5fcd000, 53248, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x20000) = 0x7f7da5fcd000
mmap(0x7f7da5fdb000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x2d000) = 0x7f7da5fdb000
mmap(0x7f7da5fdd000, 88, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_ANONYMOUS, -1, 0) = 0x7f7da5fdd000
close(3)                                = 0
openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libcom_err.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\200$\0\0\0\0\0\0"..., 832) = 832
fstat(3, {st_mode=S_IFREG|0644, st_size=22600, ...}) = 0
mmap(NULL, 24744, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f7da5fa6000
mmap(0x7f7da5fa8000, 8192, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x2000) = 0x7f7da5fa8000
mmap(0x7f7da5faa000, 4096, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x4000) = 0x7f7da5faa000
mmap(0x7f7da5fab000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x4000) = 0x7f7da5fab000
close(3)                                = 0
openat(AT_FDCWD, "/usr/lib/x86_64-linux-gnu/libkrb5support.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\3605\0\0\0\0\0\0"..., 832) = 832
fstat(3, {st_mode=S_IFREG|0644, st_size=56096, ...}) = 0
mmap(NULL, 58344, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f7da5f97000
mmap(0x7f7da5f9a000, 28672, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x3000) = 0x7f7da5f9a000
mmap(0x7f7da5fa1000, 12288, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0xa000) = 0x7f7da5fa1000
mmap(0x7f7da5fa4000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0xc000) = 0x7f7da5fa4000
close(3)                                = 0
openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libkeyutils.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"..., 832) = 832
fstat(3, {st_mode=S_IFREG|0644, st_size=22600, ...}) = 0
mmap(NULL, 24592, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f7da5f90000
mmap(0x7f7da5f92000, 8192, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x2000) = 0x7f7da5f92000
mmap(0x7f7da5f94000, 4096, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x4000) = 0x7f7da5f94000
mmap(0x7f7da5f95000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x4000) = 0x7f7da5f95000
close(3)                                = 0
openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libresolv.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 G\0\0\0\0\0\0"..., 832) = 832
fstat(3, {st_mode=S_IFREG|0644, st_size=101320, ...}) = 0
mmap(NULL, 113280, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f7da5f74000
mprotect(0x7f7da5f78000, 81920, PROT_NONE) = 0
mmap(0x7f7da5f78000, 65536, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x4000) = 0x7f7da5f78000
mmap(0x7f7da5f88000, 12288, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x14000) = 0x7f7da5f88000
mmap(0x7f7da5f8c000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x17000) = 0x7f7da5f8c000
mmap(0x7f7da5f8e000, 6784, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_ANONYMOUS, -1, 0) = 0x7f7da5f8e000
close(3)                                = 0
openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libdl.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 \22\0\0\0\0\0\0"..., 832) = 832
fstat(3, {st_mode=S_IFREG|0644, st_size=18816, ...}) = 0
```

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mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7f7da5f72000
mmap(NULL, 20752, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f7da5f6c000
mmap(0x7f7da5f6d000, 8192, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x1000) = 0x7f7da5f6d000
mmap(0x7f7da5f6f000, 4096, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x3000) = 0x7f7da5f6f000
mmap(0x7f7da5f70000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x3000) = 0x7f7da5f70000
close(3)                                = 0
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7f7da5f6a000
arch_prctl(ARCH_SET_FS, 0x7f7da5f6b180) = 0
mprotect(0x7f7da6645000, 12288, PROT_READ) = 0
mprotect(0x7f7da5f70000, 4096, PROT_READ) = 0
mprotect(0x7f7da5f8c000, 4096, PROT_READ) = 0
mprotect(0x7f7da5f95000, 4096, PROT_READ) = 0
mprotect(0x7f7da5fa4000, 4096, PROT_READ) = 0
mprotect(0x7f7da6868000, 4096, PROT_READ) = 0
mprotect(0x7f7da5fab000, 4096, PROT_READ) = 0
mprotect(0x7f7da5fdb000, 4096, PROT_READ) = 0
mprotect(0x7f7da60ad000, 57344, PROT_READ) = 0
mprotect(0x7f7da620a000, 4096, PROT_READ) = 0
mprotect(0x7f7da6255000, 8192, PROT_READ) = 0
mprotect(0x7f7da6668000, 4096, PROT_READ) = 0
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7f7da5f68000
mprotect(0x7f7da683a000, 45056, PROT_READ) = 0
mprotect(0x7f7da62ff000, 12288, PROT_READ) = 0
mprotect(0x7f7da63fd000, 4096, PROT_READ) = 0
mprotect(0x7f7da645b000, 4096, PROT_READ) = 0
mprotect(0x7f7da690c000, 28672, PROT_READ) = 0
mprotect(0x55621f289000, 4096, PROT_READ) = 0
mprotect(0x7f7da6961000, 4096, PROT_READ) = 0
munmap(0x7f7da6916000, 118993)          = 0
set_tid_address(0x7f7da5f6b450)         = 55477
set_robust_list(0x7f7da5f6b460, 24)     = 0
rt_sigaction(SIGRTMIN, {sa_handler=0x7f7da6852bf0, sa_mask=[], sa_flags=SA_RESTORER|
SA_SIGINFO, sa_restorer=0x7f7da68603c0}, NULL, 8) = 0
rt_sigaction(SIGRT_1, {sa_handler=0x7f7da6852c90, sa_mask=[], sa_flags=SA_RESTORER|
SA_RESTART|SA_SIGINFO, sa_restorer=0x7f7da68603c0}, NULL, 8) = 0
rt_sigprocmask(SIG_UNBLOCK, [RTMIN RT_1], NULL, 8) = 0
prlimit64(0, RLIMIT_STACK, NULL, {rlim_cur=8192*1024, rlim_max=RLIM64_INFINITY}) = 0
brk(NULL)                               = 0x556220e4f000
brk(0x556220e70000)                     = 0x556220e70000
futex(0x7f7da68486bc, FUTEX_WAKE_PRIVATE, 2147483647) = 0
futex(0x7f7da68486c8, FUTEX_WAKE_PRIVATE, 2147483647) = 0
openat(AT_FDCWD, "/sys/devices/system/cpu/online", O_RDONLY|O_CLOEXEC) = 3
read(3, "0-3\n", 8192)                  = 4
close(3)                                = 0
openat(AT_FDCWD, "/sys/devices/system/cpu", O_RDONLY|O_NONBLOCK|O_CLOEXEC|
O_DIRECTORY) = 3
fstat(3, {st_mode=S_IFDIR|0755, st_size=0, ...}) = 0
getdents64(3, /* 22 entries */, 32768)  = 656
getdents64(3, /* 0 entries */, 32768)   = 0
close(3)                                = 0
getpid()                                = 55477
sched_getaffinity(55477, 128, [0, 1, 2, 3]) = 8
openat(AT_FDCWD, "/etc/nsswitch.conf", O_RDONLY|O_CLOEXEC) = 3
fstat(3, {st_mode=S_IFREG|0644, st_size=545, ...}) = 0
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```
read(3, "# /etc/nsswitch.conf\n#\n# Example"..., 4096) = 545
read(3, "", 4096)                       = 0
close(3)                                = 0
openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC) = 3
fstat(3, {st_mode=S_IFREG|0644, st_size=118993, ...}) = 0
mmap(NULL, 118993, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7f7da6916000
close(3)                                = 0
stat("/usr/lib", {st_mode=S_IFDIR|0755, st_size=12288, ...}) = 0
munmap(0x7f7da6916000, 118993)          = 0
openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC) = 3
fstat(3, {st_mode=S_IFREG|0644, st_size=118993, ...}) = 0
mmap(NULL, 118993, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7f7da6916000
close(3)                                = 0
openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libnss_files.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\3005\0\0\0\0\0\0"..., 832) = 832
fstat(3, {st_mode=S_IFREG|0644, st_size=51832, ...}) = 0
mmap(NULL, 79672, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f7da5f54000
mmap(0x7f7da5f57000, 28672, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x3000) = 0x7f7da5f57000
mmap(0x7f7da5f5e000, 8192, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0xa000) = 0x7f7da5f5e000
mmap(0x7f7da5f60000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0xb000) = 0x7f7da5f60000
mmap(0x7f7da5f62000, 22328, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|
MAP_ANONYMOUS, -1, 0) = 0x7f7da5f62000
close(3)                                = 0
mprotect(0x7f7da5f60000, 4096, PROT_READ) = 0
munmap(0x7f7da6916000, 118993)          = 0
openat(AT_FDCWD, "/etc/protocols", O_RDONLY|O_CLOEXEC) = 3
lseek(3, 0, SEEK_CUR)                   = 0
fstat(3, {st_mode=S_IFREG|0644, st_size=2932, ...}) = 0
read(3, "# Internet (IP) protocols\n#\n# Up"..., 4096) = 2932
lseek(3, 0, SEEK_CUR)                   = 2932
read(3, "", 4096)                       = 0
close(3)                                = 0
eventfd2(0, EFD_CLOEXEC)                = 3
fcntl(3, F_GETFL)                       = 0x2 (flags O_RDWR)
fcntl(3, F_SETFL, O_RDWR|O_NONBLOCK)    = 0
fcntl(3, F_GETFL)                       = 0x802 (flags O_RDWR|O_NONBLOCK)
fcntl(3, F_SETFL, O_RDWR|O_NONBLOCK)    = 0
getrandom("\x6a\xbd\x80\xeb\xfa\x36\xfe\x1e\x73\xbd\x27\x54\xeb\xd9\xf5\x0e", 16, 0) = 16
getrandom("\x78\x5e\x82\x41\x3a\xd4\xda\x79\x27\xcb\x3b\xf5\x16\xb6\x6a\x3e", 16, 0) = 16
eventfd2(0, EFD_CLOEXEC)                = 4
fcntl(4, F_GETFL)                       = 0x2 (flags O_RDWR)
fcntl(4, F_SETFL, O_RDWR|O_NONBLOCK)    = 0
fcntl(4, F_GETFL)                       = 0x802 (flags O_RDWR|O_NONBLOCK)
fcntl(4, F_SETFL, O_RDWR|O_NONBLOCK)    = 0
epoll_create1(EPOLL_CLOEXEC)            = 5
epoll_ctl(5, EPOLL_CTL_ADD, 4, {0, {u32=551951712, u64=93879947107680}}) = 0
epoll_ctl(5, EPOLL_CTL_MOD, 4, {EPOLLIN, {u32=551951712, u64=93879947107680}}) = 0
mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|MAP_STACK, -1, 0) =
0x7f7da5753000
mprotect(0x7f7da5754000, 8388608, PROT_READ|PROT_WRITE) = 0
clone(child_stack=0x7f7da5f52d30, flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|
CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|
CLONE_CHILD_CLEARTID, parent_tid=[55478], tls=0x7f7da5f53700, child_tidptr=0x7f7da5f539d0) =
55478
eventfd2(0, EFD_CLOEXEC)                = 6
fcntl(6, F_GETFL)                       = 0x2 (flags O_RDWR)
fcntl(6, F_SETFL, O_RDWR|O_NONBLOCK)    = 0
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fcntl(6, F_GETFL)                       = 0x802 (flags O_RDWR|O_NONBLOCK)
fcntl(6, F_SETFL, O_RDWR|O_NONBLOCK)    = 0
epoll_create1(EPOLL_CLOEXEC)            = 7
epoll_ctl(7, EPOLL_CTL_ADD, 6, {0, {u32=551969376, u64=93879947125344}}) = 0
epoll_ctl(7, EPOLL_CTL_MOD, 6, {EPOLLIN, {u32=551969376, u64=93879947125344}}) = 0
mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|MAP_STACK, -1, 0) =
0x7f7da4f52000
mprotect(0x7f7da4f53000, 8388608, PROT_READ|PROT_WRITE) = 0
clone(child_stack=0x7f7da5751d30, flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|
CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|
CLONE_CHILD_CLEARTID, parent_tid=[55479], tls=0x7f7da5752700, child_tidptr=0x7f7da57529d0) =
55479
eventfd2(0, EFD_CLOEXEC)                = 8
fcntl(8, F_GETFL)                       = 0x2 (flags O_RDWR)
fcntl(8, F_SETFL, O_RDWR|O_NONBLOCK)    = 0
fcntl(8, F_GETFL)                       = 0x802 (flags O_RDWR|O_NONBLOCK)
fcntl(8, F_SETFL, O_RDWR|O_NONBLOCK)    = 0
eventfd2(0, EFD_CLOEXEC)                = 9
fcntl(9, F_GETFL)                       = 0x2 (flags O_RDWR)
fcntl(9, F_SETFL, O_RDWR|O_NONBLOCK)    = 0
fcntl(9, F_GETFL)                       = 0x802 (flags O_RDWR|O_NONBLOCK)
fcntl(9, F_SETFL, O_RDWR|O_NONBLOCK)    = 0
eventfd2(0, EFD_CLOEXEC)                = 10
fcntl(10, F_GETFL)                      = 0x2 (flags O_RDWR)
fcntl(10, F_SETFL, O_RDWR|O_NONBLOCK)   = 0
fcntl(10, F_GETFL)                      = 0x802 (flags O_RDWR|O_NONBLOCK)
fcntl(10, F_SETFL, O_RDWR|O_NONBLOCK)   = 0
epoll_create1(EPOLL_CLOEXEC)            = 11
epoll_ctl(11, EPOLL_CTL_ADD, 10, {0, {u32=551989888, u64=93879947145856}}) = 0
epoll_ctl(11, EPOLL_CTL_MOD, 10, {EPOLLIN, {u32=551989888, u64=93879947145856}}) = 0
mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|MAP_STACK, -1, 0) =
0x7f7da4751000
mprotect(0x7f7da4752000, 8388608, PROT_READ|PROT_WRITE) = 0
clone(child_stack=0x7f7da4f50d30, flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|
CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|
CLONE_CHILD_CLEARTID, parent_tid=[55480], tls=0x7f7da4f51700, child_tidptr=0x7f7da4f519d0) =
55480
eventfd2(0, EFD_CLOEXEC)                = 12
fcntl(12, F_GETFL)                      = 0x2 (flags O_RDWR)
fcntl(12, F_SETFL, O_RDWR|O_NONBLOCK)   = 0
fcntl(12, F_GETFL)                      = 0x802 (flags O_RDWR|O_NONBLOCK)
fcntl(12, F_SETFL, O_RDWR|O_NONBLOCK)   = 0
epoll_create1(EPOLL_CLOEXEC)            = 13
epoll_ctl(13, EPOLL_CTL_ADD, 12, {0, {u32=551991936, u64=93879947147904}}) = 0
epoll_ctl(13, EPOLL_CTL_MOD, 12, {EPOLLIN, {u32=551991936, u64=93879947147904}}) = 0
mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|MAP_STACK, -1, 0) =
0x7f7da3f50000
mprotect(0x7f7da3f51000, 8388608, PROT_READ|PROT_WRITE) = 0
clone(child_stack=0x7f7da474fd30, flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|
CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|
CLONE_CHILD_CLEARTID, parent_tid=[55481], tls=0x7f7da4750700, child_tidptr=0x7f7da47509d0) =
55481
eventfd2(0, EFD_CLOEXEC)                = 14
fcntl(14, F_GETFL)                      = 0x2 (flags O_RDWR)
fcntl(14, F_SETFL, O_RDWR|O_NONBLOCK)   = 0
fcntl(14, F_GETFL)                      = 0x802 (flags O_RDWR|O_NONBLOCK)
fcntl(14, F_SETFL, O_RDWR|O_NONBLOCK)   = 0
mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|MAP_STACK, -1, 0) =
0x7f7da374f000
mprotect(0x7f7da3750000, 8388608, PROT_READ|PROT_WRITE) = 0
```

```
clone(child_stack=0x7f7da3f4ed30, flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|
CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|
CLONE_CHILD_CLEARTID, parent_tid=[55482], tls=0x7f7da3f4f700, child_tidptr=0x7f7da3f4f9d0) =
55482
fstat(1, {st_mode=S_IFREG|0664, st_size=0, ...}) = 0
write(1, "Starting server...\n", 19)    = 19
fstat(0, {st_mode=S_IFREG|0664, st_size=78, ...}) = 0
read(0, "create 1\ncreate 2\ncreate 3\ncreat"..., 4096) = 78
//выделю только первые значимые системные вызовы
poll([{fd=8, events=POLLIN}], 1, 0)     = 0 (Timeout)
socket(AF_INET, SOCK_STREAM|SOCK_CLOEXEC, IPPROTO_TCP) = 15
setsockopt(15, SOL_SOCKET, SO_REUSEADDR, [1], 4) = 0
bind(15, {sa_family=AF_INET, sin_port=htons(4001), sin_addr=inet_addr("0.0.0.0")}, 16) = 0
listen(15, 100)                         = 0
getsockname(15, {sa_family=AF_INET, sin_port=htons(4001), sin_addr=inet_addr("0.0.0.0")}, [128->16])
= 0
getsockname(15, {sa_family=AF_INET, sin_port=htons(4001), sin_addr=inet_addr("0.0.0.0")}, [128->16])
= 0
write(6, "\1\0\0\0\0\0\0\0", 8)         = 8
write(8, "\1\0\0\0\0\0\0\0", 8)         = 8
poll([{fd=14, events=POLLIN}], 1, 0)    = 0 (Timeout)
socket(AF_INET, SOCK_STREAM|SOCK_CLOEXEC, IPPROTO_TCP) = 16
setsockopt(16, SOL_SOCKET, SO_REUSEADDR, [1], 4) = 0
bind(16, {sa_family=AF_INET, sin_port=htons(3999), sin_addr=inet_addr("0.0.0.0")}, 16) = 0
listen(16, 100)                         = 0
getsockname(16, {sa_family=AF_INET, sin_port=htons(3999), sin_addr=inet_addr("0.0.0.0")}, [128->16])
= 0
getsockname(16, {sa_family=AF_INET, sin_port=htons(3999), sin_addr=inet_addr("0.0.0.0")}, [128->16])
= 0
write(12, "\1\0\0\0\0\0\0\0", 8)        = 8
write(14, "\1\0\0\0\0\0\0\0", 8)        = 8
clone(child_stack=NULL, flags=CLONE_CHILD_CLEARTID|CLONE_CHILD_SETTID|SIGCHLD,
child_tidptr=0x7f7da5f6b450) = 55483
poll([{fd=8, events=POLLIN}], 1, 0)     = 1 ([{fd=8, revents=POLLIN}])
read(8, "\1\0\0\0\0\0\0\0", 8)          = 8
poll([{fd=8, events=POLLIN}], 1, 0)     = 0 (Timeout)
poll([{fd=8, events=POLLIN}], 1, 1000)  = 1 ([{fd=8, revents=POLLIN}])
read(8, "\1\0\0\0\0\0\0\0", 8)          = 8
poll([{fd=8, events=POLLIN}], 1, 0)     = 0 (Timeout)
write(6, "\1\0\0\0\0\0\0\0", 8)         = 8
poll([{fd=8, events=POLLIN}], 1, 0)     = 0 (Timeout)
write(6, "\1\0\0\0\0\0\0\0", 8)         = 8
write(6, "\1\0\0\0\0\0\0\0", 8)         = 8
poll([{fd=8, events=POLLIN}], 1, 0)     = 0 (Timeout)
write(6, "\1\0\0\0\0\0\0\0", 8)         = 8
write(6, "\1\0\0\0\0\0\0\0", 8)         = 8
write(6, "\1\0\0\0\0\0\0\0", 8)         = 8
write(6, "\1\0\0\0\0\0\0\0", 8)         = 8
poll([{fd=8, events=POLLIN}], 1, 0)     = 0 (Timeout)
write(6, "\1\0\0\0\0\0\0\0", 8)         = 8
read(0, "", 4096)                       = 0
write(6, "\1\0\0\0\0\0\0\0", 8)         = 8
futex(0x7f7da3f4f9d0, FUTEX_WAIT, 55482, NULL) = 0
write(4, "\1\0\0\0\0\0\0\0", 8)         = 8
poll([{fd=3, events=POLLIN}], 1, -1)    = 1 ([{fd=3, revents=POLLIN}])
read(3, "\1\0\0\0\0\0\0\0", 8)          = 8
write(6, "\1\0\0\0\0\0\0\0", 8)         = 8
close(7)                                = 0
close(6)                                = 0
close(5)                                = 0
```

```
close(4)                                = 0
close(3)                                = 0
write(10, "\1\0\0\0\0\0\0\0", 8)        = 8
poll([{fd=9, events=POLLIN}], 1, -1)    = 1 ([{fd=9, revents=POLLIN}])
read(9, "\1\0\0\0\0\0\0\0", 8)          = 8
write(12, "\1\0\0\0\0\0\0\0", 8)        = 8
close(13)                               = 0
close(12)                               = 0
munmap(0x7f7da374f000, 8392704)         = 0
close(11)                               = 0
close(10)                               = 0
close(9)                                = 0
exit_group(0)                           = ?
+++ exited with 0 +++
```

Выводы

В ходе выполнения лабораторной работы я научилась использовать strace. Я узнала, что утилита strace показывает все системные вывозы, которые делает программа во время своей работы. Отлаживать программу по stкace проблематично, так как strace выводит очень много информации, что затрудняет поиск ошибки. Но strace понимает понять как программа взаимодействует с помощью системных вызовов, что дает понимание работы программы в целом.

Литература

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