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(Национальный исследовательский Университет)

Факультет: «Информационные технологии и прикладная математика»
Кафедра: 806 «Вычислительная математика и программирование»

Лабораторная работа №1
по курсу «Операционные системы»

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Задание

При выполнении лабораторных работ 2-6 необходимо продемонстрировать ключевые системные вызовы, которые в них используются и то, что их использование соответствует варианту лабораторной работы.

Описание

Strace показывает все системные вызовы программы, которые та отправляет к системе во время выполнения, а также их параметры и результат выполнения. С помощью данной утилиты ниже будут продемонстрированы системные вызовы, которые использовались в лабораторных работах.

Лабораторная работа №2

Основные системные вызовы:

execve — выполнить исполняемый файл.

pipe — предназначен для создания pipe. Возвращает ноль при нормальном завершении и значение -1 при возникновении ошибок.

clone — предназначен для создания процесса-потомка. Возвращает PID процесса-потомка в случае успешного завершения. В случае ошибки, в контекст вызывающего процесса возвращается -1.

read — считывает данные файлового дескриптора. При успешном завершении возвращается количество байтов, которые были считаны. В случае ошибки возвращаемое значение равно -1.

write — производит запись в файловый дескриптор. В случае успешного завершения возвращается количество байтов, которые были записаны. В случае ошибки возвращается -1.

close — закрыть файловый дескриптор. Возвращает ноль при успешном завершении или -1, если произошла ошибка.

```
execve("./src", ["./src"], 0x7fffd37fabf0 /* 52 vars */) = 0
```

```
brk(NULL) = 0x5651520a0000
```

```
arch_prctl(0x3001 /* ARCH_??? */, 0x7ffef6c4fa40) = -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=97232, ...}) = 0
```

```
mmap(NULL, 97232, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7f58e61e0000
```

```
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\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"..., 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\0cBR\340\305\370\2609W\242\345)q\
235A\1"... , 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) = 0x7f58e61de000
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"... , 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\0cBR\340\305\370\2609W\242\345)q\
235A\1"... , 68, 880) = 68
mmap(NULL, 2036952, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0)
= 0x7f58e5fec000
mprotect(0x7f58e6011000, 1847296, PROT_NONE) = 0
mmap(0x7f58e6011000, 1540096, PROT_READ|PROT_EXEC, MAP_PRIVATE|
MAP_FIXED|MAP_DENYWRITE, 3, 0x25000) = 0x7f58e6011000
mmap(0x7f58e6189000, 303104, PROT_READ, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x19d000) = 0x7f58e6189000
mmap(0x7f58e61d4000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|
MAP_FIXED|MAP_DENYWRITE, 3, 0x1e7000) = 0x7f58e61d4000
mmap(0x7f58e61da000, 13528, PROT_READ|PROT_WRITE, MAP_PRIVATE|
MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7f58e61da000
close(3) = 0
arch_prctl(ARCH_SET_FS, 0x7f58e61df540) = 0
mprotect(0x7f58e61d4000, 12288, PROT_READ) = 0
mprotect(0x565150da9000, 4096, PROT_READ) = 0
mprotect(0x7f58e6225000, 4096, PROT_READ) = 0
munmap(0x7f58e61e0000, 97232) = 0
pipe([3, 4]) = 0
pipe([5, 6]) = 0
clone(child_stack=NULL, flags=CLONE_CHILD_CLEARTID|
CLONE_CHILD_SETTID|SIGCHLD, child_tidptr=0x7f58e61df810) = 7060
close(3) = 0
read(2, kol kolokol
"k", 1) = 1
write(4, "k", 1) = 1
read(2, "o", 1) = 1
write(4, "o", 1) = 1
read(2, "l", 1) = 1
write(4, "l", 1) = 1
read(2, " ", 1) = 1
write(4, " ", 1) = 1
read(2, "k", 1) = 1

```

```

write(4, "k", 1)           = 1
read(2, "o", 1)            = 1
write(4, "o", 1)           = 1
read(2, "l", 1)            = 1
write(4, "l", 1)           = 1
read(2, "o", 1)            = 1
write(4, "o", 1)           = 1
read(2, "k", 1)            = 1
write(4, "k", 1)           = 1
read(2, "o", 1)            = 1
write(4, "o", 1)           = 1
read(2, "l", 1)            = 1
write(4, "l", 1)           = 1
read(2, "\n", 1)           = 1
write(4, "\n", 1)          = 1
read(2, "", 1)             = 0
write(6, "\f\0\0\0", 4)    = 4
read(2, kolom
"k", 1)                   = 1
write(4, "k", 1)           = 1
read(2, "o", 1)            = 1
write(4, "o", 1)           = 1
read(2, "l", 1)            = 1
write(4, "l", 1)           = 1
read(2, "o", 1)            = 1
write(4, "o", 1)           = 1
read(2, "k", 1)            = 1
write(4, "k", 1)           = 1
read(2, "\n", 1)           = 1
write(4, "\n", 1)          = 1
read(2, "", 1)             = 0
write(6, "\6\0\0\0", 4)    = 4
wait4(-1, NULL, 0, NULL)   = 7060
--- SIGCHLD {si_signo=SIGCHLD, si_code=CLD_EXITED, si_pid=7060,
si_uid=1000, si_status=0, si_utime=0, si_stime=0} ---
read(5, "\4\0\0\0", 4)     = 4
fstat(1, {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0), ...}) = 0
brk(NULL)                  = 0x5651520a0000
brk(0x5651520c1000)        = 0x5651520c1000
write(1, "4\n", 24
)                           = 2
close(4)                   = 0
close(5)                   = 0
close(6)                   = 0
exit_group(0)              = ?

```

+++ exited with 0 +++

Лабораторная работа №3

Основные системные вызовы:

clone — используется для создания потока.

```
execve("./main", ["./main", "6"], 0x7ffe3ca9ffc8 /* 52 vars */) = 0
brk(NULL) = 0x5629bbe2c000
arch_prctl(0x3001 /* ARCH_??? */, 0x7ffdd797e8d0) = -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=97232, ...}) = 0
mmap(NULL, 97232, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7fa465d3b000
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\3\0>\0\1\0\0\0\220\201\0\0\0\0\0"... , 832) = 832
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0w\\\273\377\370\24Ef`xg\200\260\263\264\0"... , 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) = 0x7fa465d39000
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0w\\\273\377\370\24Ef`xg\200\260\263\264\0"... , 68, 824) = 68
mmap(NULL, 140408, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fa465d16000
mmap(0x7fa465d1d000, 69632, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x7000) = 0x7fa465d1d000
mmap(0x7fa465d2e000, 20480, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x18000) = 0x7fa465d2e000
mmap(0x7fa465d33000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1c000) = 0x7fa465d33000
mmap(0x7fa465d35000, 13432, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7fa465d35000
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\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\\20\\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\\24\\0\\0\\0\\3\\0\\0\\0GNU\\0cBR\\340\\305\\370\\2609W\\242\\345)q\\
235A\\1"..., 68, 880) = 68
fstat(3, {st_mode=S_IFREG|0755, st_size=2029224, ...}) = 0
pread64(3, "\\6\\0\\0\\4\\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\\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\\24\\0\\0\\0\\3\\0\\0\\0GNU\\0cBR\\340\\305\\370\\2609W\\242\\345)q\\
235A\\1"..., 68, 880) = 68
mmap(NULL, 2036952, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0)
= 0x7fa465b24000
mprotect(0x7fa465b49000, 1847296, PROT_NONE) = 0
mmap(0x7fa465b49000, 1540096, PROT_READ|PROT_EXEC, MAP_PRIVATE|
MAP_FIXED|MAP_DENYWRITE, 3, 0x25000) = 0x7fa465b49000
mmap(0x7fa465cc1000, 303104, PROT_READ, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x19d000) = 0x7fa465cc1000
mmap(0x7fa465d0c000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|
MAP_FIXED|MAP_DENYWRITE, 3, 0x1e7000) = 0x7fa465d0c000
mmap(0x7fa465d12000, 13528, PROT_READ|PROT_WRITE, MAP_PRIVATE|
MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7fa465d12000
close(3) = 0
mmap(NULL, 12288, PROT_READ|PROT_WRITE, MAP_PRIVATE|
MAP_ANONYMOUS, -1, 0) = 0x7fa465b21000
arch_prctl(ARCH_SET_FS, 0x7fa465b21740) = 0
mprotect(0x7fa465d0c000, 12288, PROT_READ) = 0
mprotect(0x7fa465d33000, 4096, PROT_READ) = 0
mprotect(0x5629ba7f9000, 4096, PROT_READ) = 0
mprotect(0x7fa465d80000, 4096, PROT_READ) = 0
munmap(0x7fa465d3b000, 97232) = 0
set_tid_address(0x7fa465b21a10) = 9037
set_robust_list(0x7fa465b21a20, 24) = 0
rt_sigaction(SIGRTMIN, {sa_handler=0x7fa465d1dbf0, sa_mask=[],
sa_flags=SA_RESTORER|SA_SIGINFO, sa_restorer=0x7fa465d2b3c0}, NULL, 8)
= 0
rt_sigaction(SIGRT_1, {sa_handler=0x7fa465d1dc90, sa_mask=[],
sa_flags=SA_RESTORER|SA_RESTART|SA_SIGINFO,
sa_restorer=0x7fa465d2b3c0}, 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) = 0x5629bbe2c000
brk(0x5629bbe4d000) = 0x5629bbe4d000
fstat(1, {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0), ...}) = 0

```

```

fstat(0, {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0), ...}) = 0
write(1, "Input size of matrix. Num_row Nu"..., 42Input size of matrix. Num_row
Num_column: ) = 42
read(0, 3
"3\n", 1024)          = 2
read(0, 3
"3\n", 1024)          = 2
read(0, 1
"1\n", 1024)          = 2
read(0, 2
"2\n", 1024)          = 2
read(0, 3
"3\n", 1024)          = 2
read(0, 4
"4\n", 1024)          = 2
read(0, 5
"5\n", 1024)          = 2
read(0, 6
"6\n", 1024)          = 2
read(0, 7
"7\n", 1024)          = 2
read(0, 8
"8\n", 1024)          = 2
read(0, 9
"9\n", 1024)          = 2
write(1, "Input the amount of filtering: ", 31Input the amount of filtering: ) = 31
read(0, 1
"1\n", 1024)          = 2
mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|
MAP_STACK, -1, 0) = 0x7fa465320000
mprotect(0x7fa465321000, 8388608, PROT_READ|PROT_WRITE) = 0
clone(child_stack=0x7fa465b1ffb0, flags=CLONE_VM|CLONE_FS|
CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|
CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID,
parent_tidptr=0x7fa465b209d0, tls=0x7fa465b20700, child_tidptr=0x7fa465b209d0)
= 9082
mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|
MAP_STACK, -1, 0) = 0x7fa464b1f000
mprotect(0x7fa464b20000, 8388608, PROT_READ|PROT_WRITE) = 0
clone(child_stack=0x7fa46531efb0, flags=CLONE_VM|CLONE_FS|
CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|
CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID,
parent_tidptr=0x7fa46531f9d0, tls=0x7fa46531f700, child_tidptr=0x7fa46531f9d0)
= 9083

```

```

mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|
MAP_STACK, -1, 0) = 0x7fa46431e000
mprotect(0x7fa46431f000, 8388608, PROT_READ|PROT_WRITE) = 0
clone(child_stack=0x7fa464b1dfb0, flags=CLONE_VM|CLONE_FS|
CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|
CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARARTID,
parent_tidptr=0x7fa464b1e9d0, tls=0x7fa464b1e700, child_tidptr=0x7fa464b1e9d0)
= 9084
mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|
MAP_STACK, -1, 0) = 0x7fa463b1d000
mprotect(0x7fa463b1e000, 8388608, PROT_READ|PROT_WRITE) = 0
clone(child_stack=0x7fa46431cfb0, flags=CLONE_VM|CLONE_FS|
CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|
CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARARTID,
parent_tidptr=0x7fa46431d9d0, tls=0x7fa46431d700, child_tidptr=0x7fa46431d9d0)
= 9085
mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|
MAP_STACK, -1, 0) = 0x7fa46331c000
mprotect(0x7fa46331d000, 8388608, PROT_READ|PROT_WRITE) = 0
clone(child_stack=0x7fa463b1bfb0, flags=CLONE_VM|CLONE_FS|
CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|
CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARARTID,
parent_tidptr=0x7fa463b1c9d0, tls=0x7fa463b1c700, child_tidptr=0x7fa463b1c9d0)
= 9086
mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|
MAP_STACK, -1, 0) = 0x7fa462b1b000
mprotect(0x7fa462b1c000, 8388608, PROT_READ|PROT_WRITE) = 0
clone(child_stack=0x7fa46331afb0, flags=CLONE_VM|CLONE_FS|
CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|
CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARARTID,
parent_tidptr=0x7fa46331b9d0, tls=0x7fa46331b700, child_tidptr=0x7fa46331b9d0)
= 9087
munmap(0x7fa465320000, 8392704) = 0
munmap(0x7fa464b1f000, 8392704) = 0
clone(child_stack=0x7fa46331afb0, flags=CLONE_VM|CLONE_FS|
CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|
CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARARTID,
parent_tidptr=0x7fa46331b9d0, tls=0x7fa46331b700, child_tidptr=0x7fa46331b9d0)
= 9088
clone(child_stack=0x7fa463b1bfb0, flags=CLONE_VM|CLONE_FS|
CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|
CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARARTID,
parent_tidptr=0x7fa463b1c9d0, tls=0x7fa463b1c700, child_tidptr=0x7fa463b1c9d0)
= 9089

```



```

clone(child_stack=0x7fa46431cfb0, flags=CLONE_VM|CLONE_FS|
CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|
CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID,
parent_tidptr=0x7fa46431d9d0, tls=0x7fa46431d700, child_tidptr=0x7fa46431d9d0)
= 9090
write(1, "Dilate:\n", 8Dilate:
) = 8
write(1, "1.000000 1.000000 2.000000 \n", 281.000000 1.000000 2.000000
) = 28
write(1, "1.000000 1.000000 2.000000 \n", 281.000000 1.000000 2.000000
) = 28
write(1, "4.000000 4.000000 5.000000 \n", 284.000000 4.000000 5.000000
) = 28
clone(child_stack=0x7fa46431cfb0, flags=CLONE_VM|CLONE_FS|
CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|
CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID,
parent_tidptr=0x7fa46431d9d0, tls=0x7fa46431d700, child_tidptr=0x7fa46431d9d0)
= 9091
clone(child_stack=0x7fa463b1bfb0, flags=CLONE_VM|CLONE_FS|
CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|
CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID,
parent_tidptr=0x7fa463b1c9d0, tls=0x7fa463b1c700, child_tidptr=0x7fa463b1c9d0)
= 9092
clone(child_stack=0x7fa46331afb0, flags=CLONE_VM|CLONE_FS|
CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|
CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID,
parent_tidptr=0x7fa46331b9d0, tls=0x7fa46331b700, child_tidptr=0x7fa46331b9d0)
= 9093
clone(child_stack=0x7fa464b1dfb0, flags=CLONE_VM|CLONE_FS|
CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|
CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID,
parent_tidptr=0x7fa464b1e9d0, tls=0x7fa464b1e700, child_tidptr=0x7fa464b1e9d0)
= 9094
mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|
MAP_STACK, -1, 0) = 0x7fa465320000
mprotect(0x7fa465321000, 8388608, PROT_READ|PROT_WRITE) = 0
clone(child_stack=0x7fa465b1ffb0, flags=CLONE_VM|CLONE_FS|
CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|
CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID,
parent_tidptr=0x7fa465b209d0, tls=0x7fa465b20700, child_tidptr=0x7fa465b209d0)
= 9095
mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|
MAP_STACK, -1, 0) = 0x7fa464b1f000
mprotect(0x7fa464b20000, 8388608, PROT_READ|PROT_WRITE) = 0

```

```

clone(child_stack=0x7fa46531efb0, flags=CLONE_VM|CLONE_FS|
CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|
CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID,
parent_tidptr=0x7fa46531f9d0, tls=0x7fa46531f700, child_tidptr=0x7fa46531f9d0)
= 9096
munmap(0x7fa463b1d000, 8392704) = 0
munmap(0x7fa46331c000, 8392704) = 0
clone(child_stack=0x7fa46531efb0, flags=CLONE_VM|CLONE_FS|
CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|
CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID,
parent_tidptr=0x7fa46531f9d0, tls=0x7fa46531f700, child_tidptr=0x7fa46531f9d0)
= 9097
clone(child_stack=0x7fa465b1ffb0, flags=CLONE_VM|CLONE_FS|
CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|
CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID,
parent_tidptr=0x7fa465b209d0, tls=0x7fa465b20700, child_tidptr=0x7fa465b209d0)
= 9098
clone(child_stack=0x7fa464b1dfb0, flags=CLONE_VM|CLONE_FS|
CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|
CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID,
parent_tidptr=0x7fa464b1e9d0, tls=0x7fa464b1e700, child_tidptr=0x7fa464b1e9d0)
= 9099
write(1, "Erode:\n", 7Erode:
) = 7
write(1, "5.000000 6.000000 6.000000 \n", 285.000000 6.000000 6.000000
) = 28
write(1, "8.000000 9.000000 9.000000 \n", 288.000000 9.000000 9.000000
) = 28
write(1, "8.000000 9.000000 9.000000 \n", 288.000000 9.000000 9.000000
) = 28
lseek(0, -1, SEEK_CUR) = -1 ESPIPE (Недопустимая операция
смещения)
exit_group(0) = ?
+++ exited with 0 +++

```

Лабораторная работа №4

Основные системные вызовы:

mmap — позволяет отобразить файл на память. При удачном выполнении mmap возвращает указатель на область с отраженными данными. При ошибке возвращается -1.

```

execve("./main", ["./main"], 0x7ffc4bcc1030 /* 52 vars */) = 0
brk(NULL) = 0x557e8ed0a000
arch_prctl(0x3001 /* ARCH_??? */, 0x7ffef4519b00) = -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=97232, ...}) = 0
mmap(NULL, 97232, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7fb81ad92000
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\3\0>\0\1\0\0\0\220\201\0\0\0\0\0"..., 832)
= 832
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0w\\\273\377\370\24Ef`xg\
200\260\263\264\0"..., 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) = 0x7fb81ad90000
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0w\\\273\377\370\24Ef`xg\
200\260\263\264\0"..., 68, 824) = 68
mmap(NULL, 140408, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) =
0x7fb81ad6d000
mmap(0x7fb81ad74000, 69632, PROT_READ|PROT_EXEC, MAP_PRIVATE|
MAP_FIXED|MAP_DENYWRITE, 3, 0x7000) = 0x7fb81ad74000
mmap(0x7fb81ad85000, 20480, PROT_READ, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x18000) = 0x7fb81ad85000
mmap(0x7fb81ad8a000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|
MAP_FIXED|MAP_DENYWRITE, 3, 0x1c000) = 0x7fb81ad8a000
mmap(0x7fb81ad8c000, 13432, PROT_READ|PROT_WRITE, MAP_PRIVATE|
MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7fb81ad8c000
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\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"..., 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\0cBR\340\305\370\2609W\242\345)q\
235A\1"..., 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"..., 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\0cBR\340\305\370\2609W\242\345)q\
235A\1"..., 68, 880) = 68

```

```

mmap(NULL, 2036952, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0)
= 0x7fb81ab7b000
mprotect(0x7fb81aba0000, 1847296, PROT_NONE) = 0
mmap(0x7fb81aba0000, 1540096, PROT_READ|PROT_EXEC, MAP_PRIVATE|
MAP_FIXED|MAP_DENYWRITE, 3, 0x25000) = 0x7fb81aba0000
mmap(0x7fb81ad18000, 303104, PROT_READ, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x19d000) = 0x7fb81ad18000
mmap(0x7fb81ad63000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|
MAP_FIXED|MAP_DENYWRITE, 3, 0x1e7000) = 0x7fb81ad63000
mmap(0x7fb81ad69000, 13528, PROT_READ|PROT_WRITE, MAP_PRIVATE|
MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7fb81ad69000
close(3) = 0
mmap(NULL, 12288, PROT_READ|PROT_WRITE, MAP_PRIVATE|
MAP_ANONYMOUS, -1, 0) = 0x7fb81ab78000
arch_prctl(ARCH_SET_FS, 0x7fb81ab78740) = 0
mprotect(0x7fb81ad63000, 12288, PROT_READ) = 0
mprotect(0x7fb81ad8a000, 4096, PROT_READ) = 0
mprotect(0x557e8df88000, 4096, PROT_READ) = 0
mprotect(0x7fb81add7000, 4096, PROT_READ) = 0
munmap(0x7fb81ad92000, 97232) = 0
set_tid_address(0x7fb81ab78a10) = 9666
set_robust_list(0x7fb81ab78a20, 24) = 0
rt_sigaction(SIGRTMIN, {sa_handler=0x7fb81ad74bf0, sa_mask=[],
sa_flags=SA_RESTORER|SA_SIGINFO, sa_restorer=0x7fb81ad823c0}, NULL, 8)
= 0
rt_sigaction(SIGRT_1, {sa_handler=0x7fb81ad74c90, sa_mask=[],
sa_flags=SA_RESTORER|SA_RESTART|SA_SIGINFO,
sa_restorer=0x7fb81ad823c0}, 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
statfs("/dev/shm/", {f_type=TMPFS_MAGIC, f_bsize=4096, f_blocks=1002968,
f_bfree=957439, f_bavail=957439, f_files=1002968, f_ffree=1002801,
f_fsid={val=[0, 0]}, f_namelen=255, f_frsize=4096, f_flags=ST_VALID|
ST_NOSUID|ST_NODEV}) = 0
futex(0x7fb81ad8f390, FUTEX_WAKE_PRIVATE, 2147483647) = 0
openat(AT_FDCWD, "/dev/shm/sem.sem1", O_RDWR|O_NOFOLLOW) = 3
fstat(3, {st_mode=S_IFREG|0664, st_size=32, ...}) = 0
brk(NULL) = 0x557e8ed0a000
brk(0x557e8ed2b000) = 0x557e8ed2b000
mmap(NULL, 32, PROT_READ|PROT_WRITE, MAP_SHARED, 3, 0) =
0x7fb81add6000
close(3) = 0
openat(AT_FDCWD, "/dev/shm/sem.sem2", O_RDWR|O_NOFOLLOW) = 3
fstat(3, {st_mode=S_IFREG|0664, st_size=32, ...}) = 0

```

```

mmap(NULL, 32, PROT_READ|PROT_WRITE, MAP_SHARED, 3, 0) =
0x7fb81ada9000
close(3) = 0
unlink("/dev/shm/sem.s1") = -1 ENOENT (Нет такого файла или каталога)
unlink("/dev/shm/sem.s2") = -1 ENOENT (Нет такого файла или каталога)
fstat(0, {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0), ...}) = 0
read(0, kol
"kol\n", 1024) = 4
read(0, lo kool kolokol
"lo kool kolokol\n", 1024) = 16
openat(AT_FDCWD, "mapped", O_RDWR|O_CREAT, 0666) = 3
ftruncate(3, 20) = 0
mmap(NULL, 20, PROT_READ|PROT_WRITE, MAP_SHARED, 3, 0) =
0x7fb81ada8000
clone(child_stack=NULL, flags=CLONE_CHILD_CLEARTID|
CLONE_CHILD_SETTID|SIGCHLD, child_tidptr=0x7fb81ab78a10) = 9683
futex(0x7fb81ada9000, FUTEX_WAIT_BITSET|FUTEX_CLOCK_REALTIME, 0,
NULL, FUTEX_BITSET_MATCH_ANY) = 0
fstat(1, {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0), ...}) = 0
write(1, "8\n", 28
) = 2
--- SIGCHLD {si_signo=SIGCHLD, si_code=CLD_EXITED, si_pid=9683,
si_uid=1000, si_status=0, si_utime=0, si_stime=0} ---
munmap(0x7fb81add6000, 32) = 0
munmap(0x7fb81ada9000, 32) = 0
munmap(0x7fb81ada8000, 20) = 0
close(3) = 0
exit_group(0) = ?
+++ exited with 0 +++

```

Лабораторная работа №5

```

execve("./dyn1", ["/dyn1"], 0x7fff955bb490 /* 53 vars */) = 0
brk(NULL) = 0x556ce2374000
arch_prctl(0x3001 /* ARCH_??? */, 0x7ffe2e641fd0) = -1 EINVAL (Недопустимый
аргумент)
access("/etc/ld.so.preload", R_OK) = -1 ENOENT (Нет такого файла или
каталога)
openat(AT_FDCWD,
"/home/alex/Documents/OS/lab05/src/tls/haswell/x86_64/libdeque_dyn.so",
O_RDONLY|O_CLOEXEC) = -1 ENOENT (Нет такого файла или каталога)
stat("/home/alex/Documents/OS/lab05/src/tls/haswell/x86_64", 0x7ffe2e641220) = -1
ENOENT (Нет такого файла или каталога)
openat(AT_FDCWD,
"/home/alex/Documents/OS/lab05/src/tls/haswell/libdeque_dyn.so", O_RDONLY|
O_CLOEXEC) = -1 ENOENT (Нет такого файла или каталога)

```

```

stat("/home/alex/Documents/OS/lab05/src/tls/haswell", 0x7ffe2e641220) = -1
ENOENT (Нет такого файла или каталога)
openat(AT_FDCWD,
"/home/alex/Documents/OS/lab05/src/tls/x86_64/libdequeue_dyn.so", O_RDONLY|
O_CLOEXEC) = -1 ENOENT (Нет такого файла или каталога)
stat("/home/alex/Documents/OS/lab05/src/tls/x86_64", 0x7ffe2e641220) = -1
ENOENT (Нет такого файла или каталога)
openat(AT_FDCWD, "/home/alex/Documents/OS/lab05/src/tls/libdequeue_dyn.so",
O_RDONLY|O_CLOEXEC) = -1 ENOENT (Нет такого файла или каталога)
stat("/home/alex/Documents/OS/lab05/src/tls", 0x7ffe2e641220) = -1 ENOENT (Нет
такого файла или каталога)
openat(AT_FDCWD,
"/home/alex/Documents/OS/lab05/src/haswell/x86_64/libdequeue_dyn.so",
O_RDONLY|O_CLOEXEC) = -1 ENOENT (Нет такого файла или каталога)
stat("/home/alex/Documents/OS/lab05/src/haswell/x86_64", 0x7ffe2e641220) = -1
ENOENT (Нет такого файла или каталога)
openat(AT_FDCWD,
"/home/alex/Documents/OS/lab05/src/haswell/libdequeue_dyn.so", O_RDONLY|
O_CLOEXEC) = -1 ENOENT (Нет такого файла или каталога)
stat("/home/alex/Documents/OS/lab05/src/haswell", 0x7ffe2e641220) = -1 ENOENT
(Нет такого файла или каталога)
openat(AT_FDCWD,
"/home/alex/Documents/OS/lab05/src/x86_64/libdequeue_dyn.so", O_RDONLY|
O_CLOEXEC) = -1 ENOENT (Нет такого файла или каталога)
stat("/home/alex/Documents/OS/lab05/src/x86_64", 0x7ffe2e641220) = -1 ENOENT
(Нет такого файла или каталога)
openat(AT_FDCWD, "/home/alex/Documents/OS/lab05/src/libdequeue_dyn.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\21\0\0\0\0\0"..., 832) =
832
fstat(3, {st_mode=S_IFREG|0775, st_size=16816, ...}) = 0
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|
MAP_ANONYMOUS, -1, 0) = 0x7f958ad98000
mmap(NULL, 16472, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) =
0x7f958ad93000
mmap(0x7f958ad94000, 4096, PROT_READ|PROT_EXEC, MAP_PRIVATE|
MAP_FIXED|MAP_DENYWRITE, 3, 0x1000) = 0x7f958ad94000
mmap(0x7f958ad95000, 4096, PROT_READ, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x2000) = 0x7f958ad95000
mmap(0x7f958ad96000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|
MAP_FIXED|MAP_DENYWRITE, 3, 0x2000) = 0x7f958ad96000
close(3) = 0
openat(AT_FDCWD, "/home/alex/Documents/OS/lab05/src/libc.so.6", O_RDONLY|
O_CLOEXEC) = -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=97232, ...}) = 0
mmap(NULL, 97232, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7f958ad7b000
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\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\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\0cBR\340\305\370\2609W\242\345)q\
235A\1"..., 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", 32,
848) = 32
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0cBR\340\305\370\2609W\242\345)q\
235A\1"..., 68, 880) = 68
mmap(NULL, 2036952, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0)
= 0x7f958ab89000
mprotect(0x7f958abae000, 1847296, PROT_NONE) = 0
mmap(0x7f958abae000, 1540096, PROT_READ|PROT_EXEC, MAP_PRIVATE|
MAP_FIXED|MAP_DENYWRITE, 3, 0x25000) = 0x7f958abae000
mmap(0x7f958ad26000, 303104, PROT_READ, MAP_PRIVATE|MAP_FIXED|
MAP_DENYWRITE, 3, 0x19d000) = 0x7f958ad26000
mmap(0x7f958ad71000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|
MAP_FIXED|MAP_DENYWRITE, 3, 0x1e7000) = 0x7f958ad71000
mmap(0x7f958ad77000, 13528, PROT_READ|PROT_WRITE, MAP_PRIVATE|
MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7f958ad77000
close(3) = 0
mmap(NULL, 12288, PROT_READ|PROT_WRITE, MAP_PRIVATE|
MAP_ANONYMOUS, -1, 0) = 0x7f958ab86000
arch_prctl(ARCH_SET_FS, 0x7f958ab86740) = 0
mprotect(0x7f958ad71000, 12288, PROT_READ) = 0
mprotect(0x7f958ad96000, 4096, PROT_READ) = 0
mprotect(0x556ce0da6000, 4096, PROT_READ) = 0
mprotect(0x7f958adc7000, 4096, PROT_READ) = 0
munmap(0x7f958ad7b000, 97232) = 0
brk(NULL) = 0x556ce2374000
brk(0x556ce2395000) = 0x556ce2395000
fstat(1, {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0), ...}) = 0
write(1, "select\n", 7select
) = 7

```

```

write(1, "1-print\n", 81-print
)          = 8
write(1, "2-insert\n", 92-insert
)          = 9
write(1, "3-delete\n", 93-delete
)          = 9
write(1, "4-clear\n", 84-clear
)          = 8
write(1, "5-push front\n", 135-push front
)          = 13
write(1, "6-push back\n", 126-push back
)          = 12
write(1, "7-pop front\n", 127-pop front
)          = 12
write(1, "8-pop back\n", 118-pop back
)          = 11
write(1, "9-size\n", 79-size
)          = 7
write(1, "10-front\n", 910-front
)          = 9
write(1, "11-back\n", 811-back
)          = 8
write(1, "12-end\n", 712-end
)          = 7
fstat(0, {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0), ...}) = 0
read(0, 2
"2\n", 1024)          = 2
write(1, "Enter index new value: ", 23Enter index new value: ) = 23
read(0, 0
"0\n", 1024)          = 2
write(1, "Enter value: ", 13Enter value: )          = 13
read(0, 10
"10\n", 1024)          = 3
write(1, "select\n1-print\n2-insert\n3-delete"..., 113select
1-print
2-insert
3-delete
4-clear
5-push front
6-push back
7-pop front
8-pop back
9-size
10-front
11-back

```



```

) = 113
write(1, "12-end\n", 712-end
)          = 7
read(0, 1
"1\n", 1024)          = 2
write(1, "10 \n", 410
)          = 4
write(1, "select\n1-print\n2-insert\n3-delete"..., 113select
1-print
2-insert
3-delete
4-clear
5-push front
6-push back
7-pop front
8-pop back
9-size
10-front
11-back
) = 113
write(1, "12-end\n", 712-end
)          = 7
read(0, 12
"12\n", 1024)          = 3
lseek(0, -1, SEEK_CUR)          = -1 ESPIPE (Недопустимая операция
смещения)
exit_group(0)          = ?
+++ exited with 0 +++

```

Лабораторная работа №6

alex@pc:~/Documents/OS/lab06/src/temp\$ strace -e trace=clone ./manager

```

c 1 -1
clone(child_stack=0x7fa3f31b4d30,          flags=CLONE_VM|CLONE_FS|CLONE_FILES|
CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|
CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID,          parent_tidptr=0x7fa3f31b59d0,
tls=0x7fa3f31b5700, child_tidptr=0x7fa3f31b59d0) = 10456
clone(child_stack=0x7fa3f29b3d30,          flags=CLONE_VM|CLONE_FS|CLONE_FILES|
CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|
CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID,          parent_tidptr=0x7fa3f29b49d0,
tls=0x7fa3f29b4700, child_tidptr=0x7fa3f29b49d0) = 10457
clone(child_stack=NULL,          flags=CLONE_CHILD_CLEARTID|CLONE_CHILD_SETTID|
SIGCHLD, child_tidptr=0x7fa3f31cd8d0) = 10458
Ok:10458
c 2 -1
clone(child_stack=NULL,          flags=CLONE_CHILD_CLEARTID|CLONE_CHILD_SETTID|
SIGCHLD, child_tidptr=0x7fa3f31cd8d0) = 10465

```

Ok:10465

c 3 -1

clone(child_stack=NULL, flags=CLONE_CHILD_CLEARTID|CLONE_CHILD_SETTID|SIGCHLD, child_tidptr=0x7fa3f31cd8d0) = 10472

Ok:10472

c 4 2

Ok:10477

c 5 2

Ok:10484

pingall

Ok: -1

e

--- SIGCHLD {si_signo=SIGCHLD, si_code=CLD_KILLED, si_pid=0, si_uid=1000, si_status=SIGTERM, si_utime=1, si_stime=0} ---

--- SIGCHLD {si_signo=SIGCHLD, si_code=CLD_KILLED, si_pid=0, si_uid=1000, si_status=SIGTERM, si_utime=0, si_stime=2} ---

--- SIGCHLD {si_signo=SIGCHLD, si_code=CLD_KILLED, si_pid=0, si_uid=1000, si_status=SIGTERM, si_utime=0, si_stime=0} ---

+++ exited with 0 +++