Московский Авиационный Институт

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Факультет информационных технологий и прикладной математики

Кафедра вычислительной математики и программирования

**Лабораторная работа №1 по курсу**

**«Операционные системы»**

**Тема работы**

**Приобретение практических навыков диагностики работы программного обеспечения.**

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Дата: \_\_\_\_\_\_\_\_\_\_\_

Подпись: \_\_\_\_\_\_\_\_\_\_\_

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**Репозиторий**

<https://github.com/kirillpolonskii/OS/tree/master/os_lab1>

**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.

**Общие сведения о программе**

Системные вызовы:

fork — создаёт дочерний процесс

open — открывает или, возможно, создаёт файл

pipe — создаёт однонаправленный канал связи между процессами

dup2 — дублирует файловый дескриптор

**Исходный код**

Файл str.txt

execve("./parent", ["./parent"], 0x7ffdeb9b8c70 /\* 53 vars \*/) = 0

brk(NULL) = 0x55811a6f5000

arch\_prctl(0x3001 /\* ARCH\_??? \*/, 0x7ffe48413950) = -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=76286, ...}) = 0

mmap(NULL, 76286, PROT\_READ, MAP\_PRIVATE, 3, 0) = 0x7f21f680d000

close(3) = 0

openat(AT\_FDCWD, "/lib/x86\_64-linux-gnu/libasan.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\200\*\2\0\0\0\0\0"..., 832) = 832

fstat(3, {st\_mode=S\_IFREG|0644, st\_size=1619400, ...}) = 0

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f680b000

mmap(NULL, 10689608, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f21f5dd9000

mprotect(0x7f21f5dfb000, 1458176, PROT\_NONE) = 0

mmap(0x7f21f5dfb000, 1236992, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x22000) = 0x7f21f5dfb000

mmap(0x7f21f5f29000, 217088, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x150000) = 0x7f21f5f29000

mmap(0x7f21f5f5f000, 24576, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x185000) = 0x7f21f5f5f000

mmap(0x7f21f5f65000, 9067592, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7f21f5f65000

close(3) = 0

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

read(3, "\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0`\341\t\0\0\0\0\0"..., 832) = 832

fstat(3, {st\_mode=S\_IFREG|0644, st\_size=1956992, ...}) = 0

mmap(NULL, 1972224, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f21f5bf7000

mprotect(0x7f21f5c8d000, 1290240, PROT\_NONE) = 0

mmap(0x7f21f5c8d000, 987136, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x96000) = 0x7f21f5c8d000

mmap(0x7f21f5d7e000, 299008, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x187000) = 0x7f21f5d7e000

mmap(0x7f21f5dc8000, 57344, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1d0000) = 0x7f21f5dc8000

mmap(0x7f21f5dd6000, 10240, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7f21f5dd6000

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) = 0x7f21f5bdc000

mmap(0x7f21f5bdf000, 73728, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x3000) = 0x7f21f5bdf000

mmap(0x7f21f5bf1000, 16384, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x15000) = 0x7f21f5bf1000

mmap(0x7f21f5bf5000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x18000) = 0x7f21f5bf5000

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\t\233\222%\274\260\320\31\331\326\10\204\276X>\263"..., 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\t\233\222%\274\260\320\31\331\326\10\204\276X>\263"..., 68, 880) = 68

mmap(NULL, 2036952, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f21f59ea000

mprotect(0x7f21f5a0f000, 1847296, PROT\_NONE) = 0

mmap(0x7f21f5a0f000, 1540096, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x25000) = 0x7f21f5a0f000

mmap(0x7f21f5b87000, 303104, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x19d000) = 0x7f21f5b87000

mmap(0x7f21f5bd2000, 24576, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1e7000) = 0x7f21f5bd2000

mmap(0x7f21f5bd8000, 13528, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7f21f5bd8000

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, 20752, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f21f59e4000

mmap(0x7f21f59e5000, 8192, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1000) = 0x7f21f59e5000

mmap(0x7f21f59e7000, 4096, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x3000) = 0x7f21f59e7000

mmap(0x7f21f59e8000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x3000) = 0x7f21f59e8000

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) = 0x7f21f59d9000

mprotect(0x7f21f59dc000, 24576, PROT\_NONE) = 0

mmap(0x7f21f59dc000, 16384, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x3000) = 0x7f21f59dc000

mmap(0x7f21f59e0000, 4096, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x7000) = 0x7f21f59e0000

mmap(0x7f21f59e2000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x8000) = 0x7f21f59e2000

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\0\345Ga\367\265T\320\374\301V)Yf]\223\337"..., 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) = 0x7f21f59d7000

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\345Ga\367\265T\320\374\301V)Yf]\223\337"..., 68, 824) = 68

mmap(NULL, 140408, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f21f59b4000

mmap(0x7f21f59bb000, 69632, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x7000) = 0x7f21f59bb000

mmap(0x7f21f59cc000, 20480, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x18000) = 0x7f21f59cc000

mmap(0x7f21f59d1000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1c000) = 0x7f21f59d1000

mmap(0x7f21f59d3000, 13432, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7f21f59d3000

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) = 0x7f21f5865000

mmap(0x7f21f5874000, 684032, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0xf000) = 0x7f21f5874000

mmap(0x7f21f591b000, 618496, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0xb6000) = 0x7f21f591b000

mmap(0x7f21f59b2000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x14c000) = 0x7f21f59b2000

close(3) = 0

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f5863000

arch\_prctl(ARCH\_SET\_FS, 0x7f21f5863c80) = 0

mprotect(0x7f21f5bd2000, 12288, PROT\_READ) = 0

mprotect(0x7f21f59b2000, 4096, PROT\_READ) = 0

mprotect(0x7f21f59d1000, 4096, PROT\_READ) = 0

mprotect(0x7f21f59e2000, 4096, PROT\_READ) = 0

mprotect(0x7f21f59e8000, 4096, PROT\_READ) = 0

mprotect(0x7f21f5bf5000, 4096, PROT\_READ) = 0

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f5861000

mprotect(0x7f21f5dc8000, 45056, PROT\_READ) = 0

mprotect(0x7f21f5f5f000, 12288, PROT\_READ) = 0

mprotect(0x55811939f000, 4096, PROT\_READ) = 0

mprotect(0x7f21f684d000, 4096, PROT\_READ) = 0

munmap(0x7f21f680d000, 76286) = 0

set\_tid\_address(0x7f21f5863f50) = 16978

set\_robust\_list(0x7f21f5863f60, 24) = 0

rt\_sigaction(SIGRTMIN, {sa\_handler=0x7f21f59bbbf0, sa\_mask=[], sa\_flags=SA\_RESTORER|SA\_SIGINFO, sa\_restorer=0x7f21f59c93c0}, NULL, 8) = 0

rt\_sigaction(SIGRT\_1, {sa\_handler=0x7f21f59bbc90, sa\_mask=[], sa\_flags=SA\_RESTORER|SA\_RESTART|SA\_SIGINFO, sa\_restorer=0x7f21f59c93c0}, 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

readlink("/proc/self/exe", "/home/kirill/labsMAI/sem3/OS/os\_"..., 4096) = 47

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f684c000

open("/proc/self/cmdline", O\_RDONLY) = 3

read(3, "./parent\0", 4096) = 9

read(3, "", 4087) = 0

close(3) = 0

munmap(0x7f21f684c000, 4096) = 0

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f684c000

open("/proc/self/environ", O\_RDONLY) = 3

read(3, "SHELL=/bin/bash\0SESSION\_MANAGER="..., 4096) = 3324

read(3, "", 772) = 0

close(3) = 0

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f681e000

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f681d000

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f681b000

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f681a000

mmap(NULL, 3481600, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f550f000

futex(0x7f21f59e90c8, FUTEX\_WAKE\_PRIVATE, 2147483647) = 0

prlimit64(0, RLIMIT\_CORE, {rlim\_cur=0, rlim\_max=0}, NULL) = 0

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f6819000

open("/proc/self/maps", O\_RDONLY) = 3

read(3, "558119399000-55811939b000 r--p 0"..., 4096) = 4043

read(3, "7f21f5bf1000-7f21f5bf5000 r--p 0"..., 53) = 53

close(3) = 0

munmap(0x7f21f6819000, 4096) = 0

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f6818000

open("/proc/self/maps", O\_RDONLY) = 3

read(3, "558119399000-55811939b000 r--p 0"..., 8192) = 4043

read(3, "7f21f5bf1000-7f21f5bf5000 r--p 0"..., 4149) = 2869

read(3, "", 1280) = 0

close(3) = 0

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f6817000

open("/proc/self/maps", O\_RDONLY) = 3

read(3, "558119399000-55811939b000 r--p 0"..., 4096) = 4043

read(3, "7f21f5bf1000-7f21f5bf5000 r--p 0"..., 53) = 53

close(3) = 0

munmap(0x7f21f6817000, 4096) = 0

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f6816000

open("/proc/self/maps", O\_RDONLY) = 3

read(3, "558119399000-55811939b000 r--p 0"..., 8192) = 4043

read(3, "7f21f5bf1000-7f21f5bf5000 r--p 0"..., 4149) = 2869

read(3, "", 1280) = 0

close(3) = 0

munmap(0x7f21f6816000, 8192) = 0

mmap(0x7fff7000, 268435456, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS|MAP\_NORESERVE, -1, 0) = 0x7fff7000

madvise(0x7fff7000, 268435456, MADV\_NOHUGEPAGE) = 0

madvise(0x7fff7000, 268435456, MADV\_DONTDUMP) = 0

mmap(0x2008fff7000, 15392894357504, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS|MAP\_NORESERVE, -1, 0) = 0x2008fff7000

madvise(0x2008fff7000, 15392894357504, MADV\_NOHUGEPAGE) = 0

madvise(0x2008fff7000, 15392894357504, MADV\_DONTDUMP) = 0

mmap(0x8fff7000, 2199023255552, PROT\_NONE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS|MAP\_NORESERVE, -1, 0) = 0x8fff7000

sigaltstack(NULL, {ss\_sp=NULL, ss\_flags=SS\_DISABLE, ss\_size=0}) = 0

mmap(NULL, 32768, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f6810000

sigaltstack({ss\_sp=0x7f21f6810000, ss\_flags=0, ss\_size=32768}, NULL) = 0

rt\_sigaction(SIGSEGV, {sa\_handler=0x7f21f5eeda50, sa\_mask=[], sa\_flags=SA\_RESTORER|SA\_ONSTACK|SA\_NODEFER|SA\_SIGINFO, sa\_restorer=0x7f21f5a30210}, NULL, 8) = 0

rt\_sigaction(SIGBUS, {sa\_handler=0x7f21f5eeda50, sa\_mask=[], sa\_flags=SA\_RESTORER|SA\_ONSTACK|SA\_NODEFER|SA\_SIGINFO, sa\_restorer=0x7f21f5a30210}, NULL, 8) = 0

rt\_sigaction(SIGFPE, {sa\_handler=0x7f21f5eeda50, sa\_mask=[], sa\_flags=SA\_RESTORER|SA\_ONSTACK|SA\_NODEFER|SA\_SIGINFO, sa\_restorer=0x7f21f5a30210}, NULL, 8) = 0

mmap(0x600000000000, 4398046523392, PROT\_NONE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS|MAP\_NORESERVE, -1, 0) = 0x600000000000

mmap(0x640000000000, 12288, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x640000000000

mmap(NULL, 8388608, PROT\_NONE, MAP\_PRIVATE|MAP\_ANONYMOUS|MAP\_NORESERVE, -1, 0) = 0x7f21f4d0f000

mmap(NULL, 57344, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f4d01000

mmap(NULL, 33554432, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2d01000

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f680f000

getpid() = 16978

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

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f680e000

open("/proc/self/maps", O\_RDONLY) = 3

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

read(3, "7f21f5bd5000-7f21f5bd8000 rw-p 0"..., 111) = 111

close(3) = 0

munmap(0x7f21f680e000, 4096) = 0

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f680d000

open("/proc/self/maps", O\_RDONLY) = 3

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

read(3, "7f21f5bd5000-7f21f5bd8000 rw-p 0"..., 4207) = 3256

read(3, "", 951) = 0

close(3) = 0

munmap(0x7f21f6818000, 8192) = 0

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f6819000

open("/proc/self/maps", O\_RDONLY) = 3

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

read(3, "7f21f5bd5000-7f21f5bd8000 rw-p 0"..., 111) = 111

close(3) = 0

munmap(0x7f21f6819000, 4096) = 0

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f6818000

open("/proc/self/maps", O\_RDONLY) = 3

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

read(3, "7f21f5bd5000-7f21f5bd8000 rw-p 0"..., 4207) = 3256

read(3, "", 951) = 0

close(3) = 0

munmap(0x7f21f6818000, 8192) = 0

mmap(0x100048f7b000, 1044480, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS|MAP\_NORESERVE, -1, 0) = 0x100048f7b000

madvise(0x100048f7b000, 1044480, MADV\_NOHUGEPAGE) = 0

madvise(0x100048f7b000, 1044480, MADV\_DONTDUMP) = 0

sigaltstack(NULL, {ss\_sp=0x7f21f6810000, ss\_flags=0, ss\_size=32768}) = 0

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f6819000

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f6818000

mmap(NULL, 2097152, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2b01000

munmap(0x7f21f2b01000, 1044480) = 0

munmap(0x7f21f2d00000, 4096) = 0

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2d00000

mmap(NULL, 2097152, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2a00000

munmap(0x7f21f2b00000, 1048576) = 0

mmap(NULL, 1179648, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f28e0000

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2bff000

mmap(NULL, 2097152, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f26e0000

munmap(0x7f21f26e0000, 131072) = 0

munmap(0x7f21f2800000, 917504) = 0

munmap(0x7f21f2bff000, 4096) = 0

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2bff000

munmap(0x7f21f2bff000, 4096) = 0

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2bff000

mmap(NULL, 2097152, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2500000

munmap(0x7f21f2600000, 1048576) = 0

munmap(0x7f21f2bff000, 4096) = 0

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2bff000

munmap(0x7f21f2bff000, 4096) = 0

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2bff000

munmap(0x7f21f2bff000, 4096) = 0

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2bff000

munmap(0x7f21f2bff000, 4096) = 0

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2bff000

munmap(0x7f21f2bff000, 4096) = 0

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2bff000

munmap(0x7f21f2bff000, 4096) = 0

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2bff000

munmap(0x7f21f2bff000, 4096) = 0

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2bff000

munmap(0x7f21f2bff000, 4096) = 0

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2bff000

munmap(0x7f21f2bff000, 4096) = 0

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2bff000

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2bfe000

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2bfd000

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2bfc000

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2bfa000

munmap(0x7f21f2bfc000, 4096) = 0

clock\_gettime(CLOCK\_MONOTONIC, {tv\_sec=16039, tv\_nsec=769850495}) = 0

mmap(0x607000000000, 65536, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x607000000000

mmap(0x607e00000000, 65536, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x607e00000000

mmap(NULL, 65536, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2bea000

clock\_gettime(CLOCK\_MONOTONIC, {tv\_sec=16039, tv\_nsec=769955029}) = 0

mmap(0x60b000000000, 65536, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x60b000000000

mmap(0x60be00000000, 65536, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x60be00000000

clock\_gettime(CLOCK\_MONOTONIC, {tv\_sec=16039, tv\_nsec=770048095}) = 0

mmap(0x624000000000, 65536, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x624000000000

mmap(0x624e00000000, 65536, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x624e00000000

mmap(0x631000000000, 131072, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x631000000000

mmap(0x631e00000000, 65536, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x631e00000000

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2bfc000

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2be9000

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2be8000

mmap(NULL, 36864, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2bdf000

munmap(0x7f21f2be8000, 4096) = 0

futex(0x7f21f5dd66bc, FUTEX\_WAKE\_PRIVATE, 2147483647) = 0

futex(0x7f21f5dd66c8, FUTEX\_WAKE\_PRIVATE, 2147483647) = 0

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

mmap(0x619000000000, 65536, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x619000000000

mmap(0x619e00000000, 65536, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x619e00000000

write(1, "Enter file name:\n", 17) = 17

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

read(0, "o.txt\n", 1024) = 6

pipe([3, 4]) = 0

pipe([5, 6]) = 0

openat(AT\_FDCWD, "o.txt", O\_WRONLY|O\_CREAT|O\_TRUNC, 0600) = 7

clone(child\_stack=NULL, flags=CLONE\_CHILD\_CLEARTID|CLONE\_CHILD\_SETTID|SIGCHLD, child\_tidptr=0x7f21f5863f50) = 16980

close(3) = 0

close(6) = 0

write(1, "Enter amount of strings:\n", 25) = 25

read(0, "4\n", 1024) = 2

write(4, "\4\0\0\0", 4) = 4

write(1, "Enter 4 strings:\n", 17) = 17

read(0, "wer\n", 1024) = 4

mmap(0x602000000000, 65536, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x602000000000

mmap(0x602e00000000, 65536, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x602e00000000

write(4, "\3\0\0\0", 4) = 4

write(4, "wer", 3) = 3

read(0, "WER\n", 1024) = 4

write(4, "\3\0\0\0", 4) = 4

write(4, "WER", 3) = 3

read(0, "vewrg\n", 1024) = 6

write(4, "\5\0\0\0", 4) = 4

write(4, "vewrg", 5) = 5

read(0, "F\n", 1024) = 2

write(4, "\1\0\0\0", 4) = 4

write(4, "F", 1) = 1

close(4) = 0

read(5, "\3\0\0\0", 4) = 4

read(5, "wer", 3) = 3

write(1, "In PARENT: <", 12) = 12

write(1, "wer", 3) = 3

write(1, "> doesn't start with capital\n", 29) = 29

mmap(0x603000000000, 65536, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x603000000000

mmap(0x603e00000000, 65536, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x603e00000000

write(7, "Incorrect string: wer\n", 22) = 22

read(5, "\5\0\0\0", 4) = 4

read(5, "vewrg", 5) = 5

write(1, "In PARENT: <", 12) = 12

write(1, "vewrg", 5) = 5

write(1, "> doesn't start with capital\n", 29) = 29

write(7, "Incorrect string: vewrg\n", 24) = 24

read(5, "\240\206\1\0", 4) = 4

close(5) = 0

close(7) = 0

gettid() = 16978

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2be8000

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2bde000

prctl(PR\_GET\_DUMPABLE) = 1 (SUID\_DUMP\_USER)

getpid() = 16978

mmap(NULL, 2101248, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f22ff000

mprotect(0x7f21f22ff000, 4096, PROT\_NONE) = 0

rt\_sigprocmask(SIG\_BLOCK, ~[ILL ABRT BUS FPE SEGV XCPU XFSZ], [], 8) = 0

clone(child\_stack=0x7f21f24ffff0, flags=CLONE\_VM|CLONE\_FS|CLONE\_FILES|CLONE\_UNTRACED) = 16986

rt\_sigprocmask(SIG\_SETMASK, [], NULL, 8) = 0

getpid() = 16978

prctl(PR\_SET\_PTRACER, 16986) = 0

futex(0x7ffe48413570, FUTEX\_WAKE\_PRIVATE, 1) = 1

sched\_yield() = 0

sched\_yield() = 0

sched\_yield() = 0

sched\_yield() = 0

sched\_yield() = 0

wait4(16986, NULL, \_\_WALL, NULL) = 16986

munmap(0x7f21f22ff000, 2101248) = 0

getpid() = 16978

write(2, "==16978==LeakSanitizer has encou"..., 54) = 54

mmap(NULL, 65536, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f21f2bce000

getpid() = 16978

write(2, "==16978==HINT: For debugging, tr"..., 102) = 102

getpid() = 16978

write(2, "==16978==HINT: LeakSanitizer doe"..., 75) = 75

exit\_group(1) = ?

+++ exited with 1 +++

**Выводы**

В ходе выполнения лабораторной работы я ещё раз повторил уже изученные, а также изучил новые системные вызовы, показанные утилитой strace.