

ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ
ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ
"МОСКОВСКИЙ АВИАЦИОННЫЙ ИНСТИТУТ
(НАЦИОНАЛЬНЫЙ ИССЛЕДОВАТЕЛЬСКИЙ УНИВЕРСИТЕТ)"

Факультет: «Информационные технологии и прикладная математика»

Кафедра: 806 «Вычислительная математика и программирование»

Лабораторная работа № 1 по курсу
по курсу «Операционные системы»

Группа: М8о-307Б-18

Студент:

Тояков Артем Олегович

Преподаватель:

Миронов Евгений Сергеевич

Оценка:

Дата:

Москва, 2019

Оглавление

1.Постановка задачи	3
2.Диагностика Strace.....	3
3.Вывод.....	15

1. Постановка задачи

В данной лабораторной работе нужно продемонстрировать умения работы с strace, а также протестировать все лабораторные работы с помощью strace.

2. Диагностика Strace

// Лр 2

```
artoy@artoy:~/Desktop/Labs/3 sem/OS/Lab2$ strace ./a.out
execve("./a.out", ["/a.out"], 0x7ffc2c245ec0 /* 70 vars */) = 0
brk(NULL) = 0x5566607c5000
access("/etc/ld.so.nohwcap", F_OK) = -1 ENOENT (No such file or directory)
access("/etc/ld.so.preload", R_OK) = -1 ENOENT (No such file or directory)
openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC) = 3
fstat(3, {st_mode=S_IFREG|0644, st_size=89848, ...}) = 0
mmap(NULL, 89848, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7f42f6c4e000
close(3) = 0
access("/etc/ld.so.nohwcap", F_OK) = -1 ENOENT (No such file or directory)
openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libc.so.6", O_RDONLY|O_CLOEXEC) = 3
read(3, "\177ELF\2\1\3\0\0\0\0\0\0\0\3\0>\0\1\0\0\0\260\34\2\0\0\0\0", ..., 832) = 832
fstat(3, {st_mode=S_IFREG|0755, st_size=2030544, ...}) = 0
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7f42f6c4c000
mmap(NULL, 4131552, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f42f664c000
mprotect(0x7f42f6833000, 2097152, PROT_NONE) = 0
mmap(0x7f42f6a33000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1e7000) =
0x7f42f6a33000
mmap(0x7f42f6a39000, 15072, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) =
0x7f42f6a39000
close(3) = 0
arch_prctl(ARCH_SET_FS, 0x7f42f6c4d4c0) = 0
mprotect(0x7f42f6a33000, 16384, PROT_READ) = 0
mprotect(0x55665ebce000, 4096, PROT_READ) = 0
mprotect(0x7f42f6c4000, 4096, PROT_READ) = 0
munmap(0x7f42f6c4e000, 89848) = 0
brk(NULL) = 0x5566607c5000
brk(0x5566607e6000) = 0x5566607e6000
pipe([3, 6]) = 0
pipe([7, 8]) = 0
clone(child_stack=NULL, flags=CLONE_CHILD_CLEARTID|CLONE_CHILD_SETTID|SIGCHLD, child_tidptr=0x7f42f6c4d790) = 8785
close(6) = 0
close(8) = 0
dup2(3, 0) = 0
close(0) = 0
wait4(-1, myfile
qweuqwiewq uqwhewq
uwqheuqwhewqhe qweiqw
qiwhaiqe kqwjeiqwe
ieqwqwe
[{WIFEXITED(s) && WEXITSTATUS(s) == 0}], 0, NULL) = 8785
--- SIGCHLD {si_signo=SIGCHLD, si_code=CLD_EXITED, si_pid=8785, si_uid=1000, si_status=0, si_utime=0, si_stime=0} ---
close(3) = 0
close(7) = 0
exit_group(0) = ?
+++ exited with 0 +++
```

//Ip 3

```
artoy@artoy:~/Desktop/Labs/3 sem/OS/Lab3$ strace ./a.out 2 < t1.txt
execve("./a.out", ["/a.out", "2"], 0x7ffc4c23e238 /* 70 vars */) = 0
brk(NULL) = 0x56118287c000
access("/etc/ld.so.nohwcap", F_OK) = -1 ENOENT (No such file or directory)
access("/etc/ld.so.preload", R_OK) = -1 ENOENT (No such file or directory)
openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC) = 3
fstat(3, {st_mode=S_IFREG|0644, st_size=89848, ...}) = 0
mmap(NULL, 89848, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7ffa1dec5000
close(3) = 0
access("/etc/ld.so.nohwcap", F_OK) = -1 ENOENT (No such file or directory)
openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libpthread.so.0", O_RDONLY|O_CLOEXEC) = 3
read(3, "\177ELF2\1\1\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0000b\0\0\0\0\0\0"... , 832) = 832
fstat(3, {st_mode=S_IFREG|0755, st_size=144976, ...}) = 0
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7ffa1dec3000
mmap(NULL, 222184, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7ffa1da95000
mprotect(0x7ffa1daaf000, 2093056, PROT_NONE) = 0
mmap(0x7ffa1dcae000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x19000) = 0x7ffa1dcae000
mmap(0x7ffa1dcb0000, 13440, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7ffa1dcb0000
close(3) = 0
access("/etc/ld.so.nohwcap", F_OK) = -1 ENOENT (No such file or directory)
openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libc.so.6", O_RDONLY|O_CLOEXEC) = 3
read(3, "\177ELF2\1\1\3\0\0\0\0\0\0\0\3\0>\0\1\0\0\0260\34\2\0\0\0\0"... , 832) = 832
fstat(3, {st_mode=S_IFREG|0755, st_size=2030544, ...}) = 0
mmap(NULL, 4131552, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7ffa1d6a4000
mprotect(0x7ffa1d88b000, 2097152, PROT_NONE) = 0
mmap(0x7ffa1da8b000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1e7000) = 0x7ffa1da8b000
mmap(0x7ffa1da91000, 15072, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7ffa1da91000
close(3) = 0
mmap(NULL, 12288, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7ffa1dec0000
arch_prctl(ARCH_SET_FS, 0x7ffa1dec0740) = 0
mprotect(0x7ffa1da8b000, 16384, PROT_READ) = 0
mprotect(0x7ffa1dcae000, 4096, PROT_READ) = 0
mprotect(0x561181b9d000, 4096, PROT_READ) = 0
mprotect(0x7ffa1dedb000, 4096, PROT_READ) = 0
munmap(0x7ffa1dec5000, 89848) = 0
set_tid_address(0x7ffa1dec0a10) = 23712
set_robust_list(0x7ffa1dec0a20, 24) = 0
rt_sigaction(SIGRTMIN, {sa_handler=0x7ffa1da9acb0, sa_mask=[], sa_flags=SA_RESTORER|SA_SIGINFO, sa_restorer=0x7ffa1daa78a0}, NULL, 8) = 0
rt_sigaction(SIGRT_1, {sa_handler=0x7ffa1da9ad50, sa_mask=[], sa_flags=SA_RESTORER|SA_RESTART|SA_SIGINFO, sa_restorer=0x7ffa1daa78a0}, 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=181, ...}) = 0
brk(NULL) = 0x56118287c000
brk(0x56118289d000) = 0x56118289d000
read(0, "\1n3 3\1n7 7\1n58 -86 42 -10 5 -92 -9"... , 4096) = 181
mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|MAP_STACK, -1, 0) = 0x7ffa1cea3000
mprotect(0x7ffa1cea4000, 8388608, PROT_READ|PROT_WRITE) = 0
clone(child_stack=0x7ffa1d6a2fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1d6a39d0, tls=0x7ffa1d6a3700, child_tidptr=0x7ffa1d6a39d0) = 23713
mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|MAP_STACK, -1, 0) = 0x7ffa1c6a2000
mprotect(0x7ffa1c6a3000, 8388608, PROT_READ|PROT_WRITE) = 0
clone(child_stack=0x7ffa1cea1fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1cea29d0, tls=0x7ffa1cea2700, child_tidptr=0x7ffa1cea29d0) = 23714
futex(0x7ffa1cea29d0, FUTEX_WAIT, 23714, NULL) = -1 EAGAIN (Resource temporarily unavailable)
clone(child_stack=0x7ffa1cea1fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1cea29d0, tls=0x7ffa1cea2700, child_tidptr=0x7ffa1cea29d0) = 23715
clone(child_stack=0x7ffa1d6a2fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1d6a39d0, tls=0x7ffa1d6a3700, child_tidptr=0x7ffa1d6a39d0) = 23716
clone(child_stack=0x7ffa1d6a2fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1d6a39d0, tls=0x7ffa1d6a3700, child_tidptr=0x7ffa1d6a39d0) = 23717
clone(child_stack=0x7ffa1cea1fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1cea29d0, tls=0x7ffa1cea2700, child_tidptr=0x7ffa1cea29d0) = 23718
clone(child_stack=0x7ffa1cea1fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1cea29d0, tls=0x7ffa1cea2700, child_tidptr=0x7ffa1cea29d0) = 23719
```

[illegible]

```

clone(child_stack=0x7ffa1cea1fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1cea29d0, tls=0x7ffa1cea2700, child_tidptr=0x7ffa1cea29d0) = 23746
clone(child_stack=0x7ffa1cea1fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1cea29d0, tls=0x7ffa1cea2700, child_tidptr=0x7ffa1cea29d0) = 23747
clone(child_stack=0x7ffa1d6a2fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1d6a39d0, tls=0x7ffa1d6a3700, child_tidptr=0x7ffa1d6a39d0) = 23748
clone(child_stack=0x7ffa1d6a2fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1d6a39d0, tls=0x7ffa1d6a3700, child_tidptr=0x7ffa1d6a39d0) = 23749
clone(child_stack=0x7ffa1cea1fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1cea29d0, tls=0x7ffa1cea2700, child_tidptr=0x7ffa1cea29d0) = 23750
clone(child_stack=0x7ffa1cea1fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1cea29d0, tls=0x7ffa1cea2700, child_tidptr=0x7ffa1cea29d0) = 23751
clone(child_stack=0x7ffa1d6a2fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1d6a39d0, tls=0x7ffa1d6a3700, child_tidptr=0x7ffa1d6a39d0) = 23752
clone(child_stack=0x7ffa1d6a2fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1d6a39d0, tls=0x7ffa1d6a3700, child_tidptr=0x7ffa1d6a39d0) = 23753
clone(child_stack=0x7ffa1cea1fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1cea29d0, tls=0x7ffa1cea2700, child_tidptr=0x7ffa1cea29d0) = 23754
clone(child_stack=0x7ffa1cea1fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1cea29d0, tls=0x7ffa1cea2700, child_tidptr=0x7ffa1cea29d0) = 23755
clone(child_stack=0x7ffa1d6a2fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1d6a39d0, tls=0x7ffa1d6a3700, child_tidptr=0x7ffa1d6a39d0) = 23756
clone(child_stack=0x7ffa1d6a2fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1d6a39d0, tls=0x7ffa1d6a3700, child_tidptr=0x7ffa1d6a39d0) = 23757
clone(child_stack=0x7ffa1cea1fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1cea29d0, tls=0x7ffa1cea2700, child_tidptr=0x7ffa1cea29d0) = 23758
clone(child_stack=0x7ffa1cea1fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1cea29d0, tls=0x7ffa1cea2700, child_tidptr=0x7ffa1cea29d0) = 23759
clone(child_stack=0x7ffa1d6a2fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1d6a39d0, tls=0x7ffa1d6a3700, child_tidptr=0x7ffa1d6a39d0) = 23760
clone(child_stack=0x7ffa1d6a2fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1d6a39d0, tls=0x7ffa1d6a3700, child_tidptr=0x7ffa1d6a39d0) = 23761
fstat(1, {st_mode=S_IFCHR|0620, st_rdev=makedev(136, 0), ...}) = 0
write(1, "Number of threads: 2\n", 21Number of threads: 2
) = 21
write(1, "Number of filter: 1\n", 20Number of filter: 1
) = 20
write(1, "window width: 3\n", 16window width: 3
) = 16
write(1, "window height: 3\n", 17window height: 3
) = 17
write(1, "width: 7\n", 9width: 7
) = 9
write(1, "height: 7\n", 10height: 7
) = 10
write(1, "\n", 1
) = 1
write(1, "Result matrix:\n", 15Result matrix:
) = 15
write(1, "  0  0 -14  65 -36 \"..., 42  0  0 -14  65 -36  37 -11
) = 42
write(1, "  0 -3 -82  42 -10 \"..., 42  0 -3 -82  42 -10  5 -3
) = 42
write(1, " -26 -20 -19  58  1 \"..., 42 -26 -20 -19  58  1 -50  53
) = 42
write(1, "  8 -3 -82 -44  30 \"..., 42  8 -3 -82 -44  30 -50  34
) = 42
write(1, " 41 47 -65 -44  51 \"..., 42 41 47 -65 -44  51 -50  37
) = 42
write(1, " 16 47 -65 -44  30 \"..., 42 16 47 -65 -44  30 -3  3
) = 42
write(1, "  1  1 -29 -4  42 \"..., 42  1  1 -29 -4  42 -17 -1
) = 42

```

```
lseek(0, -1, SEEK_CUR)      = 180
exit_group(0)               = ?
+++ exited with 0 +++
```

//Ip 4

```
artoy@artoy:~/Desktop/Labs/3 sem/OS/Lab4$ strace ./lab4 file1
execve("./lab4", ["/lab4", "file1"], 0x7ffd905e1a38 /* 70 vars */) = 0
brk(NULL) = 0x5560951c2000
access("/etc/ld.so.nohwcap", F_OK) = -1 ENOENT (No such file or directory)
access("/etc/ld.so.preload", R_OK) = -1 ENOENT (No such file or directory)
openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC) = 3
fstat(3, {st_mode=S_IFREG|0644, st_size=89848, ...}) = 0
mmap(NULL, 89848, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7f0555104000
close(3) = 0
access("/etc/ld.so.nohwcap", F_OK) = -1 ENOENT (No such file or directory)
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\260\34\2\0\0\0\0"... , 832) = 832
fstat(3, {st_mode=S_IFREG|0755, st_size=2030544, ...}) = 0
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7f0555102000
mmap(NULL, 4131552, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f0554b02000
mprotect(0x7f0554ce9000, 2097152, PROT_NONE) = 0
mmap(0x7f0554ee9000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1e7000) =
0x7f0554ee9000
mmap(0x7f0554eef000, 15072, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) =
0x7f0554eef000
close(3) = 0
arch_prctl(ARCH_SET_FS, 0x7f05551034c0) = 0
mprotect(0x7f0554ee9000, 16384, PROT_READ) = 0
mprotect(0x5560940e6000, 4096, PROT_READ) = 0
mprotect(0x7f055511a000, 4096, PROT_READ) = 0
munmap(0x7f0555104000, 89848) = 0
brk(NULL) = 0x5560951c2000
brk(0x5560951e3000) = 0x5560951e3000
fstat(0, {st_mode=S_IFCHR|0620, st_rdev=makedev(136, 1), ...}) = 0
read(0, uwerq
"uwerq \n", 1024) = 9
read(0, ekfqwfq fqwhf
"ekfqwfq fqwhf\n", 1024) = 16
read(0, fqjwnfjn
"fqjwnfjn \n", 1024) = 10
read(0, qkwnfqw
"qkwnfqw\n", 1024) = 11
read(0, wq fqwifqi
"wq fqwifqi \n", 1024) = 13
read(0, "", 1024) = 0
execve("child", ["uwerq \nekfqwfq fqwhf\nfqjwnfj"... , "file1"], 0x7fff32f7b510 /* 70 vars */) = 0
brk(NULL) = 0x5557c27e5000
access("/etc/ld.so.nohwcap", F_OK) = -1 ENOENT (No such file or directory)
access("/etc/ld.so.preload", R_OK) = -1 ENOENT (No such file or directory)
openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC) = 3
fstat(3, {st_mode=S_IFREG|0644, st_size=89848, ...}) = 0
mmap(NULL, 89848, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7f4f5e0dd000
close(3) = 0
access("/etc/ld.so.nohwcap", F_OK) = -1 ENOENT (No such file or directory)
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\260\34\2\0\0\0\0"... , 832) = 832
fstat(3, {st_mode=S_IFREG|0755, st_size=2030544, ...}) = 0
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7f4f5e0db000
mmap(NULL, 4131552, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f4f5dadb000
mprotect(0x7f4f5dcc2000, 2097152, PROT_NONE) = 0
mmap(0x7f4f5dec2000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1e7000) =
0x7f4f5dec2000
mmap(0x7f4f5dec8000, 15072, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) =
0x7f4f5dec8000
close(3) = 0
arch_prctl(ARCH_SET_FS, 0x7f4f5e0dc4c0) = 0
mprotect(0x7f4f5dec2000, 16384, PROT_READ) = 0
mprotect(0x5557c200b000, 4096, PROT_READ) = 0
mprotect(0x7f4f5e0f3000, 4096, PROT_READ) = 0
munmap(0x7f4f5e0dd000, 89848) = 0
brk(NULL) = 0x5557c27e5000
brk(0x5557c2806000) = 0x5557c2806000
openat(AT_FDCWD, "file1", O_RDWR|O_CREAT|O_TRUNC, 0666) = 3
lseek(3, 52, SEEK_SET) = 52
write(3, "\0", 1) = 1
mmap(NULL, 52, PROT_READ|PROT_WRITE, MAP_SHARED, 3, 0) = 0x7f4f5e0f2000
exit_group(0) = ?
+++ exited with 0 +++
```

//Ip5

artoy@artoy:~/Desktop/Labs/3 sem/OS/Lab5\$ strace ./dnm

```
execve("./dnm", [".dnm"], 0x7ffe36d06ac0 /* 70 vars */) = 0
brk(NULL) = 0x55963cc81000
access("/etc/ld.so.nohwcap", F_OK) = -1 ENOENT (No such file or directory)
access("/etc/ld.so.preload", R_OK) = -1 ENOENT (No such file or directory)
openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC) = 3
fstat(3, {st_mode=S_IFREG|0644, st_size=89848, ...}) = 0
mmap(NULL, 89848, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7f942b85d000
close(3) = 0
access("/etc/ld.so.nohwcap", F_OK) = -1 ENOENT (No such file or directory)
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\3\0>\0\1\0\0\0P\16\0\0\0\0\0...", 832) = 832
fstat(3, {st_mode=S_IFREG|0644, st_size=14560, ...}) = 0
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7f942b85b000
mmap(NULL, 2109712, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f942b448000
mprotect(0x7f942b44b000, 2093056, PROT_NONE) = 0
mmap(0x7f942b64a000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x2000)
= 0x7f942b64a000
close(3) = 0
access("/etc/ld.so.nohwcap", F_OK) = -1 ENOENT (No such file or directory)
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\260\34\2\0\0\0\0...", 832) = 832
fstat(3, {st_mode=S_IFREG|0755, st_size=2030544, ...}) = 0
mmap(NULL, 4131552, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f942b057000
mprotect(0x7f942b23e000, 2097152, PROT_NONE) = 0
mmap(0x7f942b43e000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x1e7000) = 0x7f942b43e000
mmap(0x7f942b444000, 15072, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) =
0x7f942b444000
close(3) = 0
mmap(NULL, 12288, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7f942b858000
arch_prctl(ARCH_SET_FS, 0x7f942b858740) = 0
mprotect(0x7f942b43e000, 16384, PROT_READ) = 0
mprotect(0x7f942b64a000, 4096, PROT_READ) = 0
mprotect(0x55963bd48000, 4096, PROT_READ) = 0
mprotect(0x7f942b873000, 4096, PROT_READ) = 0
munmap(0x7f942b85d000, 89848) = 0
brk(NULL) = 0x55963cc81000
brk(0x55963cca2000) = 0x55963cca2000
openat(AT_FDCWD, "./libBST.so", 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\10\0\0\0\0\0...", 832) = 832
fstat(3, {st_mode=S_IFREG|0775, st_size=16016, ...}) = 0
getcwd("/home/artoy/Desktop/Labs/3 sem/OS/Lab5", 128) = 39
mmap(NULL, 2105456, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f942ae54000
mprotect(0x7f942ae55000, 2097152, PROT_NONE) = 0
mmap(0x7f942b055000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1000)
= 0x7f942b055000
close(3) = 0
mprotect(0x7f942b055000, 4096, PROT_READ) = 0
fstat(1, {st_mode=S_IFCHR|0620, st_rdev=makedev(136, 0), ...}) = 0
fstat(0, {st_mode=S_IFCHR|0620, st_rdev=makedev(136, 0), ...}) = 0
write(1, "Please, enter your firt info ", 29Please, enter your firt info ) = 29
```



```

read(0, 1
"1\n", 1024) = 2
write(1, "Add: press a \n", 14Add: press a
) = 14
write(1, "Delete element: press d \n", 25Delete element: press d
) = 25
write(1, "Print: press p \n", 16Print: press p
) = 16
write(1, "Help: press h \n", 15Help: press h
) = 15
write(1, "Exit: press e \n", 15Exit: press e
) = 15
read(0, a
"a\n", 1024) = 2
write(1, "Enter your element ", 19Enter your element ) = 19
read(0, -5
"-5\n", 1024) = 3
read(0, a
"a\n", 1024) = 2
write(1, "Enter your element ", 19Enter your element ) = 19
read(0, 20
"20\n", 1024) = 3
read(0, a
"a\n", 1024) = 2
write(1, "Enter your element ", 19Enter your element ) = 19
read(0, 40
"40\n", 1024) = 3
read(0, d
"d\n", 1024) = 2
write(1, "Enter your element ", 19Enter your element ) = 19
read(0, 20
"20\n", 1024) = 3
read(0, p
"p\n", 1024) = 2
write(1, "1 \n", 31
) = 3
write(1, "-5 \n", 4-5
) = 4
write(1, "NULL \n", 6NULL
) = 6
write(1, "NULL \n", 6NULL
) = 6
write(1, "40 \n", 440
) = 4
write(1, "NULL \n", 6NULL
) = 6
write(1, "NULL \n", 6NULL
) = 6
read(0, h
"h\n", 1024) = 2
write(1, "Add:
press a \n", 14Add: press a
) = 14

```

```

write(1, "Delete element: press d \n", 25Delete element: press d
) = 25
write(1, "Print: press p \n", 16Print: press p
) = 16
write(1, "Help: press h \n", 15Help: press h
) = 15
write(1, "Exit: press e \n", 15Exit: press e
) = 15
read(0, e
"e\n", 1024) = 2
munmap(0x7f942ae54000, 2105456) = 0
lseek(0, -1, SEEK_CUR) = -1 ESPIPE (Illegal seek)
exit_group(0) = ?
+++ exited with 0 +++

```

//Ip6

artoy@artoy:~/Desktop/Labs/3 sem/OS/Lab3\$ strace ./a.out 2 < t1.txt

```

execve("./a.out", ["/a.out", "2"], 0x7ffc4c23e238 /* 70 vars */) = 0

brk(NULL)                               = 0x56118287c000

access("/etc/ld.so.nohwcap", F_OK)      = -1 ENOENT (No such file or directory)

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

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

fstat(3, {st_mode=S_IFREG|0644, st_size=89848, ...}) = 0

mmap(NULL, 89848, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7ffa1dec5000

close(3)                                = 0

access("/etc/ld.so.nohwcap", F_OK)      = -1 ENOENT (No such file or directory)

openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libpthread.so.0", O_RDONLY|O_CLOEXEC) = 3

read(3, "\177ELF2\1\1\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0000b\0\0\0\0\0\0"..., 832) = 832

fstat(3, {st_mode=S_IFREG|0755, st_size=144976, ...}) = 0

mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7ffa1dec3000

mmap(NULL, 2221184, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7ffa1da95000

mprotect(0x7ffa1daaf000, 2093056, PROT_NONE) = 0

mmap(0x7ffa1dcae000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x19000) = 0x7ffa1dcae000

mmap(0x7ffa1dcb0000, 13440, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7ffa1dcb0000

close(3)                                = 0

access("/etc/ld.so.nohwcap", F_OK)      = -1 ENOENT (No such file or directory)

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

read(3, "\177ELF2\1\1\3\0\0\0\0\0\0\0\3\0>\0\1\0\0\0\260\34\2\0\0\0\0"..., 832) = 832

fstat(3, {st_mode=S_IFREG|0755, st_size=2030544, ...}) = 0

mmap(NULL, 4131552, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7ffa1d6a4000

mprotect(0x7ffa1d88b000, 2097152, PROT_NONE) = 0

mmap(0x7ffa1da8b000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1e7000) = 0x7ffa1da8b000

mmap(0x7ffa1da91000, 15072, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7ffa1da91000

close(3)                                = 0

mmap(NULL, 12288, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7ffa1dec0000

```

```

arch_prctl(ARCH_SET_FS, 0x7ffa1dec0740) = 0

mprotect(0x7ffa1da8b000, 16384, PROT_READ) = 0

mprotect(0x7ffa1dcae000, 4096, PROT_READ) = 0

mprotect(0x561181b9d000, 4096, PROT_READ) = 0

mprotect(0x7ffa1dedb000, 4096, PROT_READ) = 0

munmap(0x7ffa1dec5000, 89848) = 0

set_tid_address(0x7ffa1dec0a10) = 23712

set_robust_list(0x7ffa1dec0a20, 24) = 0

rt_sigaction(SIGRTMIN, {sa_handler=0x7ffa1da9acb0, sa_mask=[], sa_flags=SA_RESTORER|SA_SIGINFO, sa_restorer=0x7ffa1daa78a0}, NULL, 8) = 0

rt_sigaction(SIGRT_1, {sa_handler=0x7ffa1da9ad50, sa_mask=[], sa_flags=SA_RESTORER|SA_RESTART|SA_SIGINFO, sa_restorer=0x7ffa1daa78a0}, 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=181, ...}) = 0

brk(NULL) = 0x56118287c000

brk(0x56118289d000) = 0x56118289d000

read(0, "l\n3 3\n7 7\n58 -86 42 -10 5 -92 -9"... , 4096) = 181

mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|MAP_STACK, -1, 0) = 0x7ffa1cea3000

mprotect(0x7ffa1cea4000, 8388608, PROT_READ|PROT_WRITE) = 0

clone(child_stack=0x7ffa1d6a2fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1d6a39d0, tls=0x7ffa1d6a3700, child_tidptr=0x7ffa1d6a39d0) = 23713

mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|MAP_STACK, -1, 0) = 0x7ffa1c6a2000

mprotect(0x7ffa1c6a3000, 8388608, PROT_READ|PROT_WRITE) = 0

clone(child_stack=0x7ffa1cea1fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1cea29d0, tls=0x7ffa1cea2700, child_tidptr=0x7ffa1cea29d0) = 23714

futex(0x7ffa1cea29d0, FUTEX_WAIT, 23714, NULL) = -1 EAGAIN (Resource temporarily unavailable)

clone(child_stack=0x7ffa1cea1fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1cea29d0, tls=0x7ffa1cea2700, child_tidptr=0x7ffa1cea29d0) = 23715

clone(child_stack=0x7ffa1d6a2fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1d6a39d0, tls=0x7ffa1d6a3700, child_tidptr=0x7ffa1d6a39d0) = 23716

clone(child_stack=0x7ffa1d6a2fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1d6a39d0, tls=0x7ffa1d6a3700, child_tidptr=0x7ffa1d6a39d0) = 23717

clone(child_stack=0x7ffa1cea1fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1cea29d0, tls=0x7ffa1cea2700, child_tidptr=0x7ffa1cea29d0) = 23718

clone(child_stack=0x7ffa1cea1fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1cea29d0, tls=0x7ffa1cea2700, child_tidptr=0x7ffa1cea29d0) = 23719

clone(child_stack=0x7ffa1d6a2fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1d6a39d0, tls=0x7ffa1d6a3700, child_tidptr=0x7ffa1d6a39d0) = 23720

```

[illegible]

[illegible]

```

clone(child_stack=0x7ffa1cea1fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1cea29d0, tls=0x7ffa1cea2700, child_tidptr=0x7ffa1cea29d0) = 23759

clone(child_stack=0x7ffa1d6a2fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1d6a39d0, tls=0x7ffa1d6a3700, child_tidptr=0x7ffa1d6a39d0) = 23760

clone(child_stack=0x7ffa1d6a2fb0,
flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tidptr=0x7ffa1d6a39d0, tls=0x7ffa1d6a3700, child_tidptr=0x7ffa1d6a39d0) = 23761

fstat(1, {st_mode=S_IFCHR|0620, st_rdev=makedev(136, 0), ...}) = 0

write(1, "Number of threads: 2\n", 21Number of threads: 2

) = 21

write(1, "Number of filter: 1\n", 20Number of filter: 1

) = 20

write(1, "window width: 3\n", 16window width: 3

) = 16

write(1, "window height: 3\n", 17window height: 3

) = 17

write(1, "width: 7\n", 9width: 7

) = 9

write(1, "height: 7\n", 10height: 7

) = 10

write(1, "\n", 1

) = 1

write(1, "Result matrix:\n", 15Result matrix:

) = 15

write(1, " 0  0 -14  65 -36 "..., 42  0  0 -14  65 -36  37 -11

) = 42

write(1, " 0  -3 -82  42 -10 "..., 42  0  -3 -82  42 -10  5  -3

) = 42

write(1, "-26 -20 -19  58  1 "..., 42 -26 -20 -19  58  1 -50  53

) = 42

write(1, " 8  -3 -82 -44  30 "..., 42  8  -3 -82 -44  30 -50  34

) = 42

write(1, " 41  47 -65 -44  51 "..., 42  41  47 -65 -44  51 -50  37

) = 42

write(1, " 16  47 -65 -44  30 "..., 42  16  47 -65 -44  30 -3  3

) = 42

write(1, " 1  1 -29 -4  42 "..., 42  1  1 -29 -4  42 -17 -1

) = 42

lseek(0, -1, SEEK_CUR) = 180

exit_group(0) = ?

+++ exited with 0 +++

```

6.Вывод

Таким образом, с помощью утилиты strace можно отслеживать системные вызовы. Для понимания и умения работы с утилитой strace необходимы знания: и чем они глубже, тем и лучше. В ходе выполнения работ я смог научиться работать с strace на приемлемом уровне, а также получать некую информацию о работе программы при вызове strace. Существует масса ситуаций в которых с помощью утилиты strace можно диагностировать какую-то программу, а также понять в чем ошибка, если она есть.