Московский Авиационный Институт

(Национальный Исследовательский Университет)

Факультет информационных технологий и прикладной математики

Кафедра вычислительной математики и программирования

**Лабораторная работа №1 по курсу**

**«Операционные системы»**

**Тема работы**

**“Использование утилиты strace”**

Студент: Зубко Дмитрий Валерьевич

Группа: М8О-208Б-20

Вариант: -

Преподаватель: Миронов Евгений Сергеевич

Оценка: \_\_\_\_\_\_\_\_\_\_\_

Дата: \_\_\_\_\_\_\_\_\_\_\_

Подпись: \_\_\_\_\_\_\_\_\_\_\_

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**Репозиторий**

https://github.com/usernameMAI

**Постановка задачи**

Задача: подробно рассказать о каждом системном вызове, отображенном утилитой strace. Разбор системных вызовов осуществляется на примере четвертой лабораторной работы курса “Операционные системы”.

**Демонстрация работы с утилитой strace и подробное объяснение каждого системного вызова**

Исходный код strace:  
   
execve("./main1", ["./main1"], 0x7ffdf5c53b50 /\* 22 vars \*/) = 0

brk(NULL) = 0x556f3f7ae000

arch\_prctl(0x3001 /\* ARCH\_??? \*/, 0x7ffccd65efd0) = -1 EINVAL (Invalid argument)

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

openat(AT\_FDCWD, "tls/x86\_64/x86\_64/libd1.so", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "tls/x86\_64/libd1.so", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "tls/x86\_64/libd1.so", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "tls/libd1.so", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "x86\_64/x86\_64/libd1.so", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "x86\_64/libd1.so", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "x86\_64/libd1.so", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "libd1.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|0777, st\_size=16216, ...}) = 0

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f872e5fa000

getcwd("/mnt/c/Users/vale4/OneDrive/\320\240\320\260\320\261\320\276\321\207\320\270\320\271 \321\201\321\202\320\276\320\273/\320\234\320\220\320\230/\320\236\320\241\320\230/lab5", 128) = 71

mmap(NULL, 16432, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f872e5f5000

mmap(0x7f872e5f6000, 4096, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1000) = 0x7f872e5f6000

mmap(0x7f872e5f7000, 4096, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x2000) = 0x7f872e5f7000

mmap(0x7f872e5f8000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x2000) = 0x7f872e5f8000

close(3) = 0

openat(AT\_FDCWD, "tls/x86\_64/x86\_64/libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "tls/x86\_64/libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "tls/x86\_64/libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "tls/libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "x86\_64/x86\_64/libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "x86\_64/libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "x86\_64/libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/x86\_64/x86\_64/libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/x86\_64/libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/x86\_64/libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./x86\_64/x86\_64/libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./x86\_64/libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./x86\_64/libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/x86\_64/x86\_64/libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/x86\_64/libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/x86\_64/libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./x86\_64/x86\_64/libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./x86\_64/libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./x86\_64/libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./libstdc++.so.6", O\_RDONLY|O\_CLOEXEC) = -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=33521, ...}) = 0

mmap(NULL, 33521, PROT\_READ, MAP\_PRIVATE, 3, 0) = 0x7f872e5ec000

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) = 0x7f872e40a000

mprotect(0x7f872e4a0000, 1290240, PROT\_NONE) = 0

mmap(0x7f872e4a0000, 987136, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x96000) = 0x7f872e4a0000

mmap(0x7f872e591000, 299008, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x187000) = 0x7f872e591000

mmap(0x7f872e5db000, 57344, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1d0000) = 0x7f872e5db000

mmap(0x7f872e5e9000, 10240, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7f872e5e9000

close(3) = 0

openat(AT\_FDCWD, "tls/x86\_64/x86\_64/libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "tls/x86\_64/libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "tls/x86\_64/libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "tls/libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "x86\_64/x86\_64/libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "x86\_64/libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "x86\_64/libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/x86\_64/x86\_64/libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/x86\_64/libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/x86\_64/libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./x86\_64/x86\_64/libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./x86\_64/libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./x86\_64/libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/x86\_64/x86\_64/libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/x86\_64/libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/x86\_64/libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./x86\_64/x86\_64/libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./x86\_64/libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./x86\_64/libc.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./libc.so.6", O\_RDONLY|O\_CLOEXEC) = -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\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) = 0x7f872e218000

mprotect(0x7f872e23d000, 1847296, PROT\_NONE) = 0

mmap(0x7f872e23d000, 1540096, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x25000) = 0x7f872e23d000

mmap(0x7f872e3b5000, 303104, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x19d000) = 0x7f872e3b5000

mmap(0x7f872e400000, 24576, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1e7000) = 0x7f872e400000

mmap(0x7f872e406000, 13528, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7f872e406000

close(3) = 0

openat(AT\_FDCWD, "tls/x86\_64/x86\_64/libm.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "tls/x86\_64/libm.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "tls/x86\_64/libm.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "tls/libm.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "x86\_64/x86\_64/libm.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "x86\_64/libm.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "x86\_64/libm.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "libm.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/x86\_64/x86\_64/libm.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/x86\_64/libm.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/x86\_64/libm.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/libm.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./x86\_64/x86\_64/libm.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./x86\_64/libm.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./x86\_64/libm.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./libm.so.6", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

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) = 0x7f872e0c9000

mmap(0x7f872e0d8000, 684032, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0xf000) = 0x7f872e0d8000

mmap(0x7f872e17f000, 618496, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0xb6000) = 0x7f872e17f000

mmap(0x7f872e216000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x14c000) = 0x7f872e216000

close(3) = 0

openat(AT\_FDCWD, "tls/x86\_64/x86\_64/libgcc\_s.so.1", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "tls/x86\_64/libgcc\_s.so.1", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "tls/x86\_64/libgcc\_s.so.1", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "tls/libgcc\_s.so.1", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "x86\_64/x86\_64/libgcc\_s.so.1", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "x86\_64/libgcc\_s.so.1", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "x86\_64/libgcc\_s.so.1", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "libgcc\_s.so.1", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/x86\_64/x86\_64/libgcc\_s.so.1", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/x86\_64/libgcc\_s.so.1", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/x86\_64/libgcc\_s.so.1", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./tls/libgcc\_s.so.1", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./x86\_64/x86\_64/libgcc\_s.so.1", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./x86\_64/libgcc\_s.so.1", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./x86\_64/libgcc\_s.so.1", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "./libgcc\_s.so.1", O\_RDONLY|O\_CLOEXEC) = -1 ENOENT (No such file or directory)

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) = 0x7f872e0ae000

mmap(0x7f872e0b1000, 73728, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x3000) = 0x7f872e0b1000

mmap(0x7f872e0c3000, 16384, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x15000) = 0x7f872e0c3000

mmap(0x7f872e0c7000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x18000) = 0x7f872e0c7000

close(3) = 0

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f872e0ac000

mmap(NULL, 12288, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f872e0a9000

arch\_prctl(ARCH\_SET\_FS, 0x7f872e0a9740) = 0

mprotect(0x7f872e400000, 12288, PROT\_READ) = 0

mprotect(0x7f872e0c7000, 4096, PROT\_READ) = 0

mprotect(0x7f872e216000, 4096, PROT\_READ) = 0

mprotect(0x7f872e5db000, 45056, PROT\_READ) = 0

mprotect(0x7f872e5f8000, 4096, PROT\_READ) = 0

mprotect(0x556f3dd53000, 4096, PROT\_READ) = 0

mprotect(0x7f872e629000, 4096, PROT\_READ) = 0

munmap(0x7f872e5ec000, 33521) = 0

brk(NULL) = 0x556f3f7ae000

brk(0x556f3f7cf000) = 0x556f3f7cf000

fstat(1, {st\_mode=S\_IFCHR|0620, st\_rdev=makedev(0x88, 0x1), ...}) = 0

write(1, "Enter command: ", 15) = 15

fstat(0, {st\_mode=S\_IFCHR|0620, st\_rdev=makedev(0x88, 0x1), ...}) = 0

read(0, "6\n", 1024) = 2

write(1, "Enter command: ", 15) = 15

read(0, "1\n", 1024) = 2

write(1, "Enter A and B: ", 15) = 15

read(0, "1 10\n", 1024) = 5

write(1, "PrimeCount in [A; B] 4\n", 23) = 23

write(1, "Enter command: ", 15) = 15

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

write(1, "Enter precision: ", 17) = 17

read(0, "10\n", 1024) = 3

write(1, "Approximate exponent value 2.593"..., 35) = 35

write(1, "Enter command: ", 15) = 15

read(0, "1\n", 1024) = 2

write(1, "Enter A and B: ", 15) = 15

read(0, "1 100\n", 1024) = 6

write(1, "PrimeCount in [A; B] 25\n", 24) = 24

write(1, "Enter command: ", 15) = 15

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

write(1, "Enter precision: ", 17) = 17

read(0, "20\n", 1024) = 3

write(1, "Approximate exponent value 2.653"..., 34) = 34

write(1, "Enter command: ", 15) = 15

read(0, "", 1024) = 0

exit\_group(0) = ?

+++ exited with 0 +++

Разберем подробнее:

**execve()** – запускает программу, при ошибке возвращает -1.

**brk()** – устанавливает значение конца сегмента данных в NULL

**arch\_prtcl()** – устанавливает специфичное для данной архитектуры состояние процесса или потока.

**access()** – проверяет права доступа к файлу, возвращает -1 при неуспехе

**openat()** – открывает файл, возвращает в качестве возвращаемого значения файловый дескриптор, иначе -1

**read()** – считывает из файлового дескриптора, возвращает количество считанных байтов

**fstat()** – возвращает информацию о файле

**mmap()** – отображает файл на память

**close()** – закрывает файловый дескриптор

**getcwd()** – копирует абсолютный путь к текущему рабочему каталогу в массиве

**mprotect()** – контролирует доступ к памяти

**pread64()** – читает с файлового дескриптора

**munmup(**) – отображает память, отведенную для отображения файла

**Выводы**

Благодаря данной лабораторной работе я узнал о утилите strace. Её использование может быть очень полезным, потому что можно напрямую из консоли узнать, как работает программа и как она реагирует на команды. На примере конкретного задания я разобрался с выводом утилиты.