

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\3\0>\0\1\0\0\0\20\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)
```

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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\3\0>\0\1\0\0\0`\341\t\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(0x7f872e40000, 1290240, PROT_NONE) = 0

mmap(0x7f872e40000, 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\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\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", 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"..., 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"... , 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(0x5556f3dd53000, 4096, PROT_READ) = 0
mprotect(0x7f872e629000, 4096, PROT_READ) = 0
munmap(0x7f872e5ec000, 33521) = 0
brk(NULL) = 0x5556f3f7ae000
brk(0x5556f3f7cf000) = 0x5556f3f7cf000
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_prctl() – 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

munmap() – 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.