Московский Авиационный Институт

(Национальный Исследовательский Университет)

Факультет информационных технологий и прикладной математики

Кафедра вычислительной математики и программирования

**Лабораторная работа №1 по курсу**

**«Операционные системы»**

Студент: Чекменев В.А.

Группа: М80-207Б-20

Преподаватель: Миронов Е.С.

Оценка: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Дата:

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## **Постановка задачи**

Цель работы — приобретение практических навыков диагностики работы программного обеспечения.

# **Strace**

**Strace** показывает все системные вызовы программы, которые она отправляет к системе во время выполнения, а также их параметры и результат выполнения. При необходимости можно подключиться к уже запущенному процессу.

Strace имеет следующие(и не только) ключи

* **-i** — выводить указатель на инструкцию во время выполнения системного вызова
* **-o** — выводить всю информацию о системных вызовах не в стандартный поток ошибок, а в файл
* **-r** — выводить временную метку для каждого системного вызова
* **-T** — выводить длительность выполнения каждого системного вызова
* **-b** — если указанный системный вызов обнаружен, трассировка прекращается
* **-l** — позволяет блокировать реакцию нажатия Ctrl+C и Ctrl+Z
* **-f** — отслеживать дочерние процессы и создаваемые потоки

## **ЛР2:**

[suraba04@asusx512fl code\_data]$ strace ./a.out

execve("./a.out", ["./a.out"], 0x7ffc0b39f8e0 /\* 72 vars \*/) = 0

brk(NULL) = 0x55d31ad50000

arch\_prctl(0x3001 /\* ARCH\_??? \*/, 0x7ffc61697d20) = -1 EINVAL (Invalid argument)

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

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=230043, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 230043, PROT\_READ, MAP\_PRIVATE, 3, 0) = 0x7fd5d7fe8000

close(3) = 0

openat(AT\_FDCWD, "/usr/lib/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\320\324\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@\0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0"..., 80, 848) = 80

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\205vn\235\204X\261n\234|\346\340|q,\2"..., 68, 928) = 68

newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=2463384, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7fd5d7fe6000

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

mmap(NULL, 2136752, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7fd5d7ddc000

mprotect(0x7fd5d7e08000, 1880064, PROT\_NONE) = 0

mmap(0x7fd5d7e08000, 1531904, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x2c000) = 0x7fd5d7e08000

mmap(0x7fd5d7f7e000, 344064, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1a2000) = 0x7fd5d7f7e000

mmap(0x7fd5d7fd3000, 24576, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1f6000) = 0x7fd5d7fd3000

mmap(0x7fd5d7fd9000, 51888, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7fd5d7fd9000

close(3) = 0

mmap(NULL, 12288, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7fd5d7dd9000

arch\_prctl(ARCH\_SET\_FS, 0x7fd5d7dd9740) = 0

set\_tid\_address(0x7fd5d7dd9a10) = 19195

set\_robust\_list(0x7fd5d7dd9a20, 24) = 0

rseq(0x7fd5d7dda0e0, 0x20, 0, 0x53053053) = 0

mprotect(0x7fd5d7fd3000, 12288, PROT\_READ) = 0

mprotect(0x55d31aaa3000, 4096, PROT\_READ) = 0

mprotect(0x7fd5d8056000, 8192, PROT\_READ) = 0

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

munmap(0x7fd5d7fe8000, 230043) = 0

pipe2([3, 4], 0) = 0

clone(child\_stack=NULL, flags=CLONE\_CHILD\_CLEARTID|CLONE\_CHILD\_SETTID|SIGCHLD, child\_tidptr=0x7fd5d7dd9a10) = 19196

getpid() = 19195

newfstatat(1, "", {st\_mode=S\_IFCHR|0620, st\_rdev=makedev(0x88, 0x4), ...}, AT\_EMPTY\_PATH) = 0

getrandom("\x2e\xc3\x47\x1a\xf9\x68\x3d\xd8", 8, GRND\_NONBLOCK) = 8

brk(NULL) = 0x55d31ad50000

brk(0x55d31ad71000) = 0x55d31ad71000

newfstatat(0, "", {st\_mode=S\_IFCHR|0620, st\_rdev=makedev(0x88, 0x4), ...}, AT\_EMPTY\_PATH) = 0

write(1, "[Parent Process, id=19195]: Ente"..., 76[Parent Process, id=19195]: Enter name of the file where result will store: ) = 76

read(0, f10

"f10\n", 1024) = 4

getpid() = 19195

write(1, "[Parent Process, id=19195]: Ente"..., 69[Parent Process, id=19195]: Enter the sequence of real type numbers: ) = 69

read(0, 2 3 4 6 42.2

"2 3 4 6 42.2\n", 1024) = 13

getpid() = 19195

write(1, "[Parent Process, id=19195]: Writ"..., 76[Parent Process, id=19195]: Writing to the pipe. Message is file name: f10

) = 76

write(4, "f10\0\0\0\0\0\0\0\4\0\0\0\0\0\4\0\0\0", 20) = 20

write(4, "2 3 4 6 42.2\0\0\0\0\f\0\0\0\10\0\0\0\0\0\0\0\0\0\0\0"..., 100) = 100

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

close(3) = 0

close(4) = 0

[Child Process, id=19196]: Reading from the pipe. Message is file name: f10

[Child Process, id=19196]: Reading from the pipe. Message is sequence of numbers: 2 3 4 6 42.2

exit\_group(0) = ?

+++ exited with 0 +++

## **ЛР3:**

[suraba04@asusx512fl code\_data]$ strace ./fin\_version

execve("./fin\_version", ["./fin\_version"], 0x7fff10a9ff10 /\* 72 vars \*/) = 0

brk(NULL) = 0x55cf22907000

arch\_prctl(0x3001 /\* ARCH\_??? \*/, 0x7fff136138d0) = -1 EINVAL (Invalid argument)

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

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=212244, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 212244, PROT\_READ, MAP\_PRIVATE, 3, 0) = 0x7f759c747000

close(3) = 0

openat(AT\_FDCWD, "/usr/lib/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@\220\t\0\0\0\0\0"..., 832) = 832

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\212\260\345pT\335\35\313\246\201\362\27\1j\374j"..., 36, 800) = 36

newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=17969672, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f759c745000

mmap(NULL, 2185280, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f759c52f000

mmap(0x7f759c5c8000, 1048576, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x99000) = 0x7f759c5c8000

mmap(0x7f759c6c8000, 442368, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x199000) = 0x7f759c6c8000

mmap(0x7f759c734000, 57344, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x204000) = 0x7f759c734000

mmap(0x7f759c742000, 10304, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7f759c742000

close(3) = 0

openat(AT\_FDCWD, "/usr/lib/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\260\363\0\0\0\0\0\0"..., 832) = 832

newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=1323472, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 1323032, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f759c3eb000

mprotect(0x7f759c3fa000, 1257472, PROT\_NONE) = 0

mmap(0x7f759c3fa000, 630784, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0xf000) = 0x7f759c3fa000

mmap(0x7f759c494000, 622592, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0xa9000) = 0x7f759c494000

mmap(0x7f759c52d000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x141000) = 0x7f759c52d000

close(3) = 0

openat(AT\_FDCWD, "/usr/lib/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 0\0\0\0\0\0\0"..., 832) = 832

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=475944, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 107240, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f759c3d0000

mprotect(0x7f759c3d3000, 90112, PROT\_NONE) = 0

mmap(0x7f759c3d3000, 73728, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x3000) = 0x7f759c3d3000

mmap(0x7f759c3e5000, 12288, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x15000) = 0x7f759c3e5000

mmap(0x7f759c3e9000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x18000) = 0x7f759c3e9000

close(3) = 0

openat(AT\_FDCWD, "/usr/lib/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\300\200\0\0\0\0\0\0"..., 832) = 832

pread64(3, "\4\0\0\0@\0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0"..., 80, 792) = 80

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\7\310\371[O2Q\320\205P!z\330\241\363\20"..., 68, 872) = 68

newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=154040, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 131472, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f759c3af000

mprotect(0x7f759c3b6000, 81920, PROT\_NONE) = 0

mmap(0x7f759c3b6000, 61440, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x7000) = 0x7f759c3b6000

mmap(0x7f759c3c5000, 16384, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x16000) = 0x7f759c3c5000

mmap(0x7f759c3ca000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1a000) = 0x7f759c3ca000

mmap(0x7f759c3cc000, 12688, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7f759c3cc000

close(3) = 0

openat(AT\_FDCWD, "/usr/lib/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`|\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@\0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0"..., 80, 848) = 80

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0K@g7\5w\10\300\344\306B4Zp<G"..., 68, 928) = 68

newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=2150424, ...}, AT\_EMPTY\_PATH) = 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

mmap(NULL, 1880536, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f759c1e3000

mmap(0x7f759c209000, 1355776, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x26000) = 0x7f759c209000

mmap(0x7f759c354000, 311296, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x171000) = 0x7f759c354000

mmap(0x7f759c3a0000, 24576, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1bc000) = 0x7f759c3a0000

mmap(0x7f759c3a6000, 33240, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7f759c3a6000

close(3) = 0

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f759c1e1000

mmap(NULL, 12288, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f759c1de000

arch\_prctl(ARCH\_SET\_FS, 0x7f759c1de740) = 0

mprotect(0x7f759c3a0000, 12288, PROT\_READ) = 0

mprotect(0x7f759c3ca000, 4096, PROT\_READ) = 0

mprotect(0x7f759c3e9000, 4096, PROT\_READ) = 0

mprotect(0x7f759c52d000, 4096, PROT\_READ) = 0

mprotect(0x7f759c734000, 53248, PROT\_READ) = 0

mprotect(0x55cf21546000, 4096, PROT\_READ) = 0

mprotect(0x7f759c7a9000, 8192, PROT\_READ) = 0

munmap(0x7f759c747000, 212244) = 0

set\_tid\_address(0x7f759c1dea10) = 36989

set\_robust\_list(0x7f759c1dea20, 24) = 0

rt\_sigaction(SIGRTMIN, {sa\_handler=0x7f759c3b6b70, sa\_mask=[], sa\_flags=SA\_RESTORER|SA\_SIGINFO, sa\_restorer=0x7f759c3c2870}, NULL, 8) = 0

rt\_sigaction(SIGRT\_1, {sa\_handler=0x7f759c3b6c10, sa\_mask=[], sa\_flags=SA\_RESTORER|SA\_RESTART|SA\_SIGINFO, sa\_restorer=0x7f759c3c2870}, 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) = 0x55cf22907000

brk(0x55cf22928000) = 0x55cf22928000

futex(0x7f759c7426bc, FUTEX\_WAKE\_PRIVATE, 2147483647) = 0

futex(0x7f759c7426c8, FUTEX\_WAKE\_PRIVATE, 2147483647) = 0

newfstatat(1, "", {st\_mode=S\_IFCHR|0620, st\_rdev=makedev(0x88, 0x4), ...}, AT\_EMPTY\_PATH) = 0

write(1, "Enter size of the matrix: ", 26Enter size of the matrix: ) = 26

newfstatat(0, "", {st\_mode=S\_IFCHR|0620, st\_rdev=makedev(0x88, 0x4), ...}, AT\_EMPTY\_PATH) = 0

read(0, 4

"4\n", 1024) = 2

write(1, "enter values:\n", 14enter values:

) = 14

read(0, 1 2 3 4

3 4 2 4

5 8 0 6

-1 3 0 " 1 2 3 4 \n", 1024) = 13

read(0, " 3 4 2 4 \n", 1024) = 13

read(0, " 5 8 0 6 \n", 1024) = 13

read(0, 6

" -1 3 0 6\n", 1024) = 13

mmap(NULL, 8392704, PROT\_NONE, MAP\_PRIVATE|MAP\_ANONYMOUS|MAP\_STACK, -1, 0) = 0x7f759b9dd000

mprotect(0x7f759b9de000, 8388608, PROT\_READ|PROT\_WRITE) = 0

rt\_sigprocmask(SIG\_BLOCK, ~[], [], 8) = 0

clone(child\_stack=0x7f759c1dcef0, flags=CLONE\_VM|CLONE\_FS|CLONE\_FILES|CLONE\_SIGHAND|CLONE\_THREAD|CLONE\_SYSVSEM|CLONE\_SETTLS|CLONE\_PARENT\_SETTID|CLONE\_CHILD\_CLEARTIDIn 1 loop for lower matrix: thread id = 140143107102272

, parent\_tid=[37096], tls=0x7f759c1dd640, child\_tidptr=0x7f759c1dd910) = 37096

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

mmap(NULL, 8392704, PROT\_NONE, MAP\_PRIVATE|MAP\_ANONYMOUS|MAP\_STACK, -1, 0) = 0x7f759b1dc000

mprotect(0x7f759b1dd000, 8388608, PROT\_READ|PROT\_WRITE) = 0

rt\_sigprocmask(SIG\_BLOCK, ~[], [], 8) = 0

clone(child\_stack=0x7f759b9dbef0, flags=CLONE\_VM|CLONE\_FS|CLONE\_FILES|CLONE\_SIGHAND|CLONE\_THREAD|CLONE\_SYSVSEM|CLONE\_SETTLS|CLONE\_PARENT\_SETTID|CLONE\_CHILD\_CLEARTIDIn 1 loop for upper matrix: thread id = 140143098709568

, parent\_tid=[0], tls=0x7f759b9dc640, child\_tidptr=0x7f759b9dc910) = 37097

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

rt\_sigprocmask(SIG\_BLOCK, ~[], [], 8) = 0

clone(child\_stack=0x7f759b9dbef0, flags=CLONE\_VM|CLONE\_FS|CLONE\_FILES|CLONE\_SIGHAND|CLONE\_THREAD|CLONE\_SYSVSEM|CLONE\_SETTLS|CLONE\_PARENT\_SETTID|CLONE\_CHILD\_CLEARTIDIn 2 loop for lower matrix: thread id = 140143098709568

, parent\_tid=[0], tls=0x7f759b9dc640, child\_tidptr=0x7f759b9dc910) = 37098

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

rt\_sigprocmask(SIG\_BLOCK, ~[], [], 8) = 0

clone(child\_stack=0x7f759c1dcef0, flags=CLONE\_VM|CLONE\_FS|CLONE\_FILES|CLONE\_SIGHAND|CLONE\_THREAD|CLONE\_SYSVSEM|CLONE\_SETTLS|CLONE\_PARENT\_SETTID|CLONE\_CHILD\_CLEARTID, parent\_tid=[37099], tls=0x7f759c1dd640, child\_tidptr=0x7f759c1dd910) = 37099

In 2 loop for upper matrix: thread id = 140143107102272

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

rt\_sigprocmask(SIG\_BLOCK, ~[], [], 8) = 0

clone(child\_stack=0x7f759c1dcef0, flags=CLONE\_VM|CLONE\_FS|CLONE\_FILES|CLONE\_SIGHAND|CLONE\_THREAD|CLONE\_SYSVSEM|CLONE\_SETTLS|CLONE\_PARENT\_SETTID|CLONE\_CHILD\_CLEARTIDIn 3 loop for lower matrix: thread id = 140143107102272

, parent\_tid=[37100], tls=0x7f759c1dd640, child\_tidptr=0x7f759c1dd910) = 37100

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

rt\_sigprocmask(SIG\_BLOCK, ~[], [], 8) = 0

clone(child\_stack=0x7f759b9dbef0, flags=CLONE\_VM|CLONE\_FS|CLONE\_FILES|CLONE\_SIGHAND|CLONE\_THREAD|CLONE\_SYSVSEM|CLONE\_SETTLS|CLONE\_PARENT\_SETTID|CLONE\_CHILD\_CLEARTIDIn 3 loop for upper matrix: thread id = 140143098709568

, parent\_tid=[37101], tls=0x7f759b9dc640, child\_tidptr=0x7f759b9dc910) = 37101

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

write(1, "Fisrt matrix\n", 13Fisrt matrix

) = 13

write(1, " 1 2 3 4 \n", 13 1 2 3 4

) = 13

write(1, " 3 4 2 4 \n", 13 3 4 2 4

) = 13

write(1, " 5 8 0 6 \n", 13 5 8 0 6

) = 13

write(1, " -1 3 0 6 \n", 14 -1 3 0 6

) = 14

write(1, "U matrix\n", 9U matrix

) = 9

write(1, " 1 2 3 4 \n", 13 1 2 3 4

) = 13

write(1, " 0 -2 -7 -8 \n", 16 0 -2 -7 -8

) = 16

write(1, " 0 0 -8 -6 \n", 15 0 0 -8 -6

) = 15

write(1, " 0 0 0 0.875 \n", 17 0 0 0 0.875

) = 17

write(1, "L matrix\n", 9L matrix

) = 9

write(1, " 1 0 0 0 \n", 13 1 0 0 0

) = 13

write(1, " 3 1 0 0 \n", 13 3 1 0 0

) = 13

write(1, " 5 1 1 0 \n", 13 5 1 1 0

) = 13

write(1, " -1 -2.5 1.8125 1 \n", 22 -1 -2.5 1.8125 1

) = 22

write(1, "L\*U matrix\n", 11L\*U matrix

) = 11

write(1, " 1 2 3 4 \n", 13 1 2 3 4

) = 13

write(1, " 3 4 2 4 \n", 13 3 4 2 4

) = 13

write(1, " 5 8 0 6 \n", 13 5 8 0 6

) = 13

write(1, " -1 3 0 6 \n", 14 -1 3 0 6

) = 14

write(1, "determinant = 14\n", 17determinant = 14

) = 17

lseek(0, -1, SEEK\_CUR) = -1 ESPIPE (Illegal seek)

exit\_group(0) = ?

+++ exited with 0 +++

## **ЛР4:**

[suraba04@asusx512fl lab4]$ strace ./my\_try2

execve("./my\_try2", ["./my\_try2"], 0x7ffd7503c0c0 /\* 72 vars \*/) = 0

brk(NULL) = 0x55ccdc76e000

arch\_prctl(0x3001 /\* ARCH\_??? \*/, 0x7ffe2081f4b0) = -1 EINVAL (Invalid argument)

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

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=212244, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 212244, PROT\_READ, MAP\_PRIVATE, 3, 0) = 0x7f844bac3000

close(3) = 0

openat(AT\_FDCWD, "/usr/lib/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\300\200\0\0\0\0\0\0"..., 832) = 832

pread64(3, "\4\0\0\0@\0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0"..., 80, 792) = 80

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\7\310\371[O2Q\320\205P!z\330\241\363\20"..., 68, 872) = 68

newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=154040, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f844bac1000

mmap(NULL, 131472, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f844baa0000

mprotect(0x7f844baa7000, 81920, PROT\_NONE) = 0

mmap(0x7f844baa7000, 61440, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x7000) = 0x7f844baa7000

mmap(0x7f844bab6000, 16384, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x16000) = 0x7f844bab6000

mmap(0x7f844babb000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1a000) = 0x7f844babb000

mmap(0x7f844babd000, 12688, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7f844babd000

close(3) = 0

openat(AT\_FDCWD, "/usr/lib/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\2207\0\0\0\0\0\0"..., 832) = 832

newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=39408, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 43520, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f844ba95000

mmap(0x7f844ba98000, 16384, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x3000) = 0x7f844ba98000

mmap(0x7f844ba9c000, 8192, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x7000) = 0x7f844ba9c000

mmap(0x7f844ba9e000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x8000) = 0x7f844ba9e000

close(3) = 0

openat(AT\_FDCWD, "/usr/lib/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`|\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@\0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0"..., 80, 848) = 80

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0K@g7\5w\10\300\344\306B4Zp<G"..., 68, 928) = 68

newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=2150424, ...}, AT\_EMPTY\_PATH) = 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

mmap(NULL, 1880536, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f844b8c9000

mmap(0x7f844b8ef000, 1355776, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x26000) = 0x7f844b8ef000

mmap(0x7f844ba3a000, 311296, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x171000) = 0x7f844ba3a000

mmap(0x7f844ba86000, 24576, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1bc000) = 0x7f844ba86000

mmap(0x7f844ba8c000, 33240, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7f844ba8c000

close(3) = 0

mmap(NULL, 12288, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f844b8c6000

arch\_prctl(ARCH\_SET\_FS, 0x7f844b8c6740) = 0

mprotect(0x7f844ba86000, 12288, PROT\_READ) = 0

mprotect(0x7f844babb000, 4096, PROT\_READ) = 0

mprotect(0x7f844ba9e000, 4096, PROT\_READ) = 0

mprotect(0x55ccdb7f7000, 4096, PROT\_READ) = 0

mprotect(0x7f844bb25000, 8192, PROT\_READ) = 0

munmap(0x7f844bac3000, 212244) = 0

set\_tid\_address(0x7f844b8c6a10) = 16308

set\_robust\_list(0x7f844b8c6a20, 24) = 0

rt\_sigaction(SIGRTMIN, {sa\_handler=0x7f844baa7b70, sa\_mask=[], sa\_flags=SA\_RESTORER|SA\_SIGINFO, sa\_restorer=0x7f844bab3870}, NULL, 8) = 0

rt\_sigaction(SIGRT\_1, {sa\_handler=0x7f844baa7c10, sa\_mask=[], sa\_flags=SA\_RESTORER|SA\_RESTART|SA\_SIGINFO, sa\_restorer=0x7f844bab3870}, 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=999075, f\_bfree=957080, f\_bavail=957080, f\_files=999075, f\_ffree=997786, f\_fsid={val=[0, 0]}, f\_namelen=255, f\_frsize=4096, f\_flags=ST\_VALID|ST\_NOSUID|ST\_NODEV}) = 0

futex(0x7f844bac0130, FUTEX\_WAKE\_PRIVATE, 2147483647) = 0

unlink("/dev/shm/sem.semaphore") = 0

getrandom("\x46\x5e\x03\x30\xe2\xa9\xe9\xb4", 8, GRND\_NONBLOCK) = 8

newfstatat(AT\_FDCWD, "/dev/shm/A2sehg", 0x7ffe2081f070, AT\_SYMLINK\_NOFOLLOW) = -1 ENOENT (No such file or directory)

openat(AT\_FDCWD, "/dev/shm/A2sehg", O\_RDWR|O\_CREAT|O\_EXCL, 0600) = 3

write(3, "\1\0\0\0\0\0\0\0\200\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0", 32) = 32

mmap(NULL, 32, PROT\_READ|PROT\_WRITE, MAP\_SHARED, 3, 0) = 0x7f844baf6000

link("/dev/shm/A2sehg", "/dev/shm/sem.semaphore") = 0

newfstatat(3, "", {st\_mode=S\_IFREG|0600, st\_size=32, ...}, AT\_EMPTY\_PATH) = 0

brk(NULL) = 0x55ccdc76e000

brk(0x55ccdc78f000) = 0x55ccdc78f000

unlink("/dev/shm/A2sehg") = 0

close(3) = 0

openat(AT\_FDCWD, "shared\_fds1.txt", O\_RDWR|O\_CREAT, 0600) = 3

mmap(NULL, 4096, PROT\_READ|PROT\_WRITE, MAP\_SHARED, 3, 0) = 0x7f844baf5000

newfstatat(1, "", {st\_mode=S\_IFCHR|0620, st\_rdev=makedev(0x88, 0x1), ...}, AT\_EMPTY\_PATH) = 0

newfstatat(0, "", {st\_mode=S\_IFCHR|0620, st\_rdev=makedev(0x88, 0x1), ...}, AT\_EMPTY\_PATH) = 0

write(1, "Print input name of file: ", 26Print input name of file: ) = 26

read(0, 0x55ccdc76e710, 1024) = ? ERESTARTSYS (To be restarted if SA\_RESTART is set)

--- SIGWINCH {si\_signo=SIGWINCH, si\_code=SI\_KERNEL} ---

read(0, file11

"file11\n", 1024) = 7

openat(AT\_FDCWD, "file11", O\_WRONLY|O\_CREAT, 0600) = 4

clone(child\_stack=NULL, flags=CLONE\_CHILD\_CLEARTID|CLONE\_CHILD\_SETTID|SIGCHLD, child\_tidptr=0x7f844b8c6a10) = 16369

getpid() = 16308

write(1, "[16308] It's parent. Child id: 1"..., 37[16308] It's parent. Child id: 16369

) = 37

getpid() = 16308

write(1, "[Parent Process, id=16308]: Ente"..., 69[Parent Process, id=16308]: Enter the sequence of real type numbers: ) = 69

read(0, 08327460.3256 23572357.2 572372457.245725 235723.5723570x55ccdc76e710, 1024) = ? ERESTARTSYS (To be restarted if SA\_RESTART is set)

--- SIGWINCH {si\_signo=SIGWINCH, si\_code=SI\_KERNEL} ---

read(0, 364235.7235723 252.582 2357

"08327460.3256 23572357.2 5723724"..., 1024) = 83

ftruncate(3, 83) = 0

getpid() = 16308

write(1, "[Parent Process, id=16308]: Writ"..., 170[Parent Process, id=16308]: Writing to the shared\_fds. Message is sequence of numbers: 08327460.3256 23572357.2 572372457.245725 235723.572357364235.7235723 252.582 2357

) = 170

write(1, "\n\n", 2

) = 2

futex(0x7f844baf6000, FUTEX\_WAKE, 1) = 1

close(3) = 0

[Child Process, id=16369]: computing...

close(4) = 0

munmap(0x7f844baf6000, 32) = 0

unlink("shared\_fds1.txt") = 0

--- SIGCHLD {si\_signo=SIGCHLD, si\_code=CLD\_EXITED, si\_pid=16369, si\_uid=1000, si\_status=0, si\_utime=0, si\_stime=0} ---

exit\_group(0) = ?

+++ exited with 0 +++

## **ЛР5:**

**Prog1:**

[suraba04@asusx512fl src]$ strace ./Prog1

execve("./Prog1", ["./Prog1"], 0x7ffd9cc4b2b0 /\* 73 vars \*/) = 0

brk(NULL) = 0x561f7f1af000

arch\_prctl(0x3001 /\* ARCH\_??? \*/, 0x7ffc7f61e720) = -1 EINVAL (Invalid argument)

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

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=212244, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 212244, PROT\_READ, MAP\_PRIVATE, 3, 0) = 0x7f66ad5e3000

close(3) = 0

openat(AT\_FDCWD, "/usr/lib/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\260\363\0\0\0\0\0\0"..., 832) = 832

newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=1323472, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f66ad5e1000

mmap(NULL, 1323032, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f66ad49d000

mprotect(0x7f66ad4ac000, 1257472, PROT\_NONE) = 0

mmap(0x7f66ad4ac000, 630784, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0xf000) = 0x7f66ad4ac000

mmap(0x7f66ad546000, 622592, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0xa9000) = 0x7f66ad546000

mmap(0x7f66ad5df000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x141000) = 0x7f66ad5df000

close(3) = 0

openat(AT\_FDCWD, "/usr/lib/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`|\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@\0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0"..., 80, 848) = 80

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0K@g7\5w\10\300\344\306B4Zp<G"..., 68, 928) = 68

newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=2150424, ...}, AT\_EMPTY\_PATH) = 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

mmap(NULL, 1880536, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f66ad2d1000

mmap(0x7f66ad2f7000, 1355776, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x26000) = 0x7f66ad2f7000

mmap(0x7f66ad442000, 311296, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x171000) = 0x7f66ad442000

mmap(0x7f66ad48e000, 24576, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1bc000) = 0x7f66ad48e000

mmap(0x7f66ad494000, 33240, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7f66ad494000

close(3) = 0

mmap(NULL, 12288, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f66ad2ce000

arch\_prctl(ARCH\_SET\_FS, 0x7f66ad2ce740) = 0

mprotect(0x7f66ad48e000, 12288, PROT\_READ) = 0

mprotect(0x7f66ad5df000, 4096, PROT\_READ) = 0

mprotect(0x561f7de3d000, 4096, PROT\_READ) = 0

mprotect(0x7f66ad645000, 8192, PROT\_READ) = 0

munmap(0x7f66ad5e3000, 212244) = 0

newfstatat(1, "", {st\_mode=S\_IFCHR|0620, st\_rdev=makedev(0x88, 0), ...}, AT\_EMPTY\_PATH) = 0

brk(NULL) = 0x561f7f1af000

brk(0x561f7f1d0000) = 0x561f7f1d0000

write(1, "To compute integral sin(x) [A, B"..., 69To compute integral sin(x) [A, B] with accuracy = e enter -- 1 A B e

) = 69

write(1, "To compute figure area with side"..., 62To compute figure area with sides lengths A, B enter -- 2 A B

) = 62

newfstatat(0, "", {st\_mode=S\_IFCHR|0620, st\_rdev=makedev(0x88, 0), ...}, AT\_EMPTY\_PATH) = 0

read(0, 0x561f7f1af6b0, 1024) = ? ERESTARTSYS (To be restarted if SA\_RESTART is set)

--- SIGWINCH {si\_signo=SIGWINCH, si\_code=SI\_KERNEL} ---

read(0, 1 0 1 0.0001

"1 0 1 0.0001\n", 1024) = 13

write(1, "Integral: 0.4596556425\n", 23Integral: 0.4596556425

) = 23

read(0, 2 4 5

"2 4 5\n", 1024) = 6

write(1, "Area: 20.000000\n", 16Area: 20.000000

) = 16

read(0, 1 5 9 0.01

"1 5 9 0.01\n", 1024) = 11

write(1, "Integral: 1.1879268885\n", 23Integral: 1.1879268885

) = 23

read(0, "", 1024) = 0

exit\_group(0) = ?

+++ exited with 0 +++

**Prog2:**

[suraba04@asusx512fl src]$ strace ./Prog2

execve("./Prog2", ["./Prog2"], 0x7fffc6f1d910 /\* 73 vars \*/) = 0

brk(NULL) = 0x5558ca7ea000

arch\_prctl(0x3001 /\* ARCH\_??? \*/, 0x7ffdd0b6dac0) = -1 EINVAL (Invalid argument)

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

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=212244, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 212244, PROT\_READ, MAP\_PRIVATE, 3, 0) = 0x7f00c74bf000

close(3) = 0

openat(AT\_FDCWD, "/usr/lib/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\0000\"\0\0\0\0\0\0"..., 832) = 832

newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=22704, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f00c74bd000

mmap(NULL, 24720, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f00c74b6000

mmap(0x7f00c74b8000, 8192, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x2000) = 0x7f00c74b8000

mmap(0x7f00c74ba000, 4096, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x4000) = 0x7f00c74ba000

mmap(0x7f00c74bb000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x4000) = 0x7f00c74bb000

close(3) = 0

openat(AT\_FDCWD, "/usr/lib/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`|\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@\0\0\0\5\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0"..., 80, 848) = 80

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0K@g7\5w\10\300\344\306B4Zp<G"..., 68, 928) = 68

newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=2150424, ...}, AT\_EMPTY\_PATH) = 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

mmap(NULL, 1880536, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f00c72ea000

mmap(0x7f00c7310000, 1355776, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x26000) = 0x7f00c7310000

mmap(0x7f00c745b000, 311296, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x171000) = 0x7f00c745b000

mmap(0x7f00c74a7000, 24576, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1bc000) = 0x7f00c74a7000

mmap(0x7f00c74ad000, 33240, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7f00c74ad000

close(3) = 0

mmap(NULL, 12288, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f00c72e7000

arch\_prctl(ARCH\_SET\_FS, 0x7f00c72e7740) = 0

mprotect(0x7f00c74a7000, 12288, PROT\_READ) = 0

mprotect(0x7f00c74bb000, 4096, PROT\_READ) = 0

mprotect(0x5558c8bd7000, 4096, PROT\_READ) = 0

mprotect(0x7f00c7527000, 8192, PROT\_READ) = 0

munmap(0x7f00c74bf000, 212244) = 0

brk(NULL) = 0x5558ca7ea000

brk(0x5558ca80b000) = 0x5558ca80b000

openat(AT\_FDCWD, "./lib1.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\0P\20\0\0\0\0\0\0"..., 832) = 832

newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=15488, ...}, AT\_EMPTY\_PATH) = 0

getcwd("/home/suraba04/labs/OS/lab5/src", 128) = 32

mmap(NULL, 16440, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f00c74ee000

mmap(0x7f00c74ef000, 4096, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1000) = 0x7f00c74ef000

mmap(0x7f00c74f0000, 4096, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x2000) = 0x7f00c74f0000

mmap(0x7f00c74f1000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x2000) = 0x7f00c74f1000

close(3) = 0

openat(AT\_FDCWD, "/etc/ld.so.cache", O\_RDONLY|O\_CLOEXEC) = 3

newfstatat(3, "", {st\_mode=S\_IFREG|0644, st\_size=212244, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 212244, PROT\_READ, MAP\_PRIVATE, 3, 0) = 0x7f00c72b3000

close(3) = 0

openat(AT\_FDCWD, "/usr/lib/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\260\363\0\0\0\0\0\0"..., 832) = 832

newfstatat(3, "", {st\_mode=S\_IFREG|0755, st\_size=1323472, ...}, AT\_EMPTY\_PATH) = 0

mmap(NULL, 1323032, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f00c716f000

mprotect(0x7f00c717e000, 1257472, PROT\_NONE) = 0

mmap(0x7f00c717e000, 630784, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0xf000) = 0x7f00c717e000

mmap(0x7f00c7218000, 622592, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0xa9000) = 0x7f00c7218000

mmap(0x7f00c72b1000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x141000) = 0x7f00c72b1000

close(3) = 0

mprotect(0x7f00c72b1000, 4096, PROT\_READ) = 0

mprotect(0x7f00c74f1000, 4096, PROT\_READ) = 0

munmap(0x7f00c72b3000, 212244) = 0

newfstatat(1, "", {st\_mode=S\_IFCHR|0620, st\_rdev=makedev(0x88, 0), ...}, AT\_EMPTY\_PATH) = 0

write(1, "To compute integral sin(x) [A, B"..., 69To compute integral sin(x) [A, B] with accuracy = e enter -- 1 A B e

) = 69

write(1, "To compute figure area with side"..., 62To compute figure area with sides lengths A, B enter -- 2 A B

) = 62

newfstatat(0, "", {st\_mode=S\_IFCHR|0620, st\_rdev=makedev(0x88, 0), ...}, AT\_EMPTY\_PATH) = 0

read(0, 1 0 1 0.001

"1 0 1 0.001\n", 1024) = 12

write(1, "Integral: 0.4584364295\n", 23Integral: 0.4584364295

) = 23

read(0, 5

"5\n", 1024) = 2

write(1, "This command is not supported, e"..., 44This command is not supported, enter 1 or 0

) = 44

read(0, 5 0 245

"5 0 245\n", 1024) = 8

write(1, "This command is not supported, e"..., 44This command is not supported, enter 1 or 0

) = 44

write(1, "This command is not supported, e"..., 44This command is not supported, enter 1 or 0

) = 44

write(1, "This command is not supported, e"..., 44This command is not supported, enter 1 or 0

) = 44

write(1, "This command is not supported, e"..., 44This command is not supported, enter 1 or 0

) = 44

read(0, 1 46 235 0.01

"1 46 235 0.01\n", 1024) = 14

write(1, "Area: 45.000000\n", 16Area: 45.000000

) = 16

write(1, "This command is not supported, e"..., 44This command is not supported, enter 1 or 0

) = 44

write(1, "This command is not supported, e"..., 44This command is not supported, enter 1 or 0

) = 44

write(1, "This command is not supported, e"..., 44This command is not supported, enter 1 or 0

) = 44

write(1, "This command is not supported, e"..., 44This command is not supported, enter 1 or 0

) = 44

write(1, "Area: 0.350000\n", 15Area: 0.350000

) = 15

read(0, "", 1024) = 0

munmap(0x7f00c74ee000, 16440) = 0

munmap(0x7f00c716f000, 1323032) = 0

exit\_group(0) = ?

+++ exited with 0 +++

## **ЛР6-8:**

# **Вывод**

В результате данной лабораторной работы я познакомился с утилитой strace, узнал о ее возможностях. С ее помощью можно отследить всю последовательность выполнения программы, какие системные вызовы и в каком порядке она делает, а также может помочь при отладке.