Московский Авиационный Институт

(Национальный Исследовательский Университет)

Факультет информационных технологий и прикладной математики

Кафедра вычислительной математики и программирования

Лабораторная работа №1 по курсу

«Операционные системы»

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Содержание

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"..., 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\0f\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\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\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\3\0>\0\1\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\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\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"..., 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\200\0\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\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.