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Факультет информационных технологий и прикладной математики
Кафедра вычислительной математики и программирования

Лабораторная работа 8

по курсу

«Операционные системы»

III Семестр

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Цель работы

Приобретение практических навыков диагностики работы программного обеспечения.

Постановка задачи

При выполнении лабораторных работ по курсу ОС необходимо продемонстрировать ключевые системные вызовы, которые в них используются и то, что их использование соответствует варианту ЛР. По итогам выполнения всех лабораторных работ отчет по данной ЛР должен содержать краткую сводку по исследованию написанных программ.

Демонстрация ключевых системных вызовов

Лабораторная работа 1

```
alexander@DESKTOP-KNBCFCI:~/labsos/lab1/build$ strace ./main
execve("./main", ["./main"], 0x7fffa3de94c0 /* 26 vars */) = 0
brk(NULL)                               = 0x55ffeac94000
arch_prctl(0x3001 /* ARCH_??? */, 0x7ffe6b73fcb0) = -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
fstat(3, {st_mode=S_IFREG|0644, st_size=50863, ...}) = 0
mmap(NULL, 50863, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7f2b1b68c000
close(3)                                = 0
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\300A\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\356\276]_K`\213\212S\354Dkc\230\33\272"..., 68, 880) =
68
fstat(3, {st_mode=S_IFREG|0755, st_size=2029592, ...}) = 0
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7f2b1b68a000
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\356\276]_K`\213\212S\354Dkc\230\33\272"..., 68, 880) =
68
```

mmap(NULL, 2037344, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f2b1b498000

mmap(0x7f2b1b4ba000, 1540096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x22000) = 0x7f2b1b4ba000

mmap(0x7f2b1b632000, 319488, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x19a000) = 0x7f2b1b632000

mmap(0x7f2b1b680000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1e7000) = 0x7f2b1b680000

mmap(0x7f2b1b686000, 13920, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7f2b1b686000

close(3) = 0

arch_prctl(ARCH_SET_FS, 0x7f2b1b68b540) = 0

mprotect(0x7f2b1b680000, 16384, PROT_READ) = 0

mprotect(0x55ffe8ec8000, 4096, PROT_READ) = 0

mprotect(0x7f2b1b6c6000, 4096, PROT_READ) = 0

munmap(0x7f2b1b68c000, 50863) = 0

pipe([3, 4]) = 0

pipe([5, 6]) = 0

clone(child_stack=NULL, flags=CLONE_CHILD_CLEARTID|CLONE_CHILD_SETTID|SIGCHLD, child_tidptr=0x7f2b1b68b810) = 15210

pipe([7, 8]) = 0

clone(child_stack=NULL, flags=CLONE_CHILD_CLEARTID|CLONE_CHILD_SETTID|SIGCHLD, child_tidptr=0x7f2b1b68b810) = 15211

close(3) = 0

close(5) = 0

close(6) = 0

close(8) = 0

write(1, "Enter a string: \n\0\0\0\377U\0\0\r\0\0\0\0\0", 30Enter a string:

) = 30

read(0, jjfjfj fjjfjf fjfjjf

"jjfjfj fjjfjf fjfjjf\n", 1024) = 23

write(4, "jjfjfj fjjfjf fjfjjf\n", 23) = 23

read(0, aa vv dd kk ddd

"aa vv dd kk ddd\n", 1024) = 21

write(4, "aa vv dd kk ddd\n", 21) = 21

read(0, "", 1024) = 0

close(4) = 0

write(1, "Result: \n\0\0\0\0\0\0\0\0\0\0", 20) = ? ERESTARTSYS (To be restarted if SA_RESTART is set)

--- SIGCHLD {si_signo=SIGCHLD, si_code=CLD_EXITED, si_pid=15210, si_uid=1000, si_status=0, si_utime=0, si_stime=0} ---

write(1, "Result: \n\0\0\0\0\0\0\0\0\0\0", 20Result:

) = 20

read(7, "JJFJFJ\360\0FJJFJFF\0JJFJJJF\nJAAVVDDK"..., 1024) = 39

write(1, "JJFJFJ\360\0FJJFJFF\0JJFJJJF\nJAAVVDDK"..., 39JJFJFJFJJFJFFJJFJJJF

JAAVVDDKK DDD

) = 39

read(7, "", 1024) = 0

close(7) = 0

exit_group(0) = ?

+++ exited with 0 +++

Лабораторная работа 2

alexander@DESKTOP-KNBCFCI:~/labsos/lab2/build$ strace ./main

execve("./main", ["./main"], 0x7ffdd8841510 /* 26 vars */) = 0

brk(NULL) = 0x5561a7259000

arch_prctl(0x3001 /* ARCH_??? */, 0x7fffc548b2d0) = -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

fstat(3, {st_mode=S_IFREG|0644, st_size=50863, ...}) = 0

mmap(NULL, 50863, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7fd20a227000

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@E\n\0\0\0\0"..., 832) = 832

fstat(3, {st_mode=S_IFREG|0644, st_size=2526680, ...}) = 0

mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7fd20a225000

mmap(NULL, 2544064, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fd209fb7000

mprotect(0x7fd20a053000, 1835008, PROT_NONE) = 0

mmap(0x7fd20a053000, 1253376, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x9c000) = 0x7fd20a053000

mmap(0x7fd20a185000, 577536, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1ce000) = 0x7fd20a185000

mmap(0x7fd20a213000, 57344, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x25b000) = 0x7fd20a213000

mmap(0x7fd20a221000, 12736, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7fd20a221000

close(3) = 0

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\323\0\0\0\0\0\0"..., 832) = 832

fstat(3, {st_mode=S_IFREG|0644, st_size=1369384, ...}) = 0

mmap(NULL, 1368336, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fd209e68000

mmap(0x7fd209e75000, 684032, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0xd000) = 0x7fd209e75000

mmap(0x7fd209f1c000, 626688, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0xb4000) = 0x7fd209f1c000

mmap(0x7fd209fb5000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x14c000) = 0x7fd209fb5000

close(3) = 0

openat(AT_FDCWD, "/lib/x86_64-linux-gnu/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\220q\0\0\0\0\0\0"..., 832) = 832

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\f\4K\246\21\256\356\256\273\203t\346`\6\0374"..., 68, 824) = 68

fstat(3, {st_mode=S_IFREG|0755, st_size=157224, ...}) = 0

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\f\4K\246\21\256\356\256\273\203t\346`\6\0374"..., 68, 824) = 68

mmap(NULL, 140408, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fd209e45000

mmap(0x7fd209e4b000, 69632, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x6000) = 0x7fd209e4b000

mmap(0x7fd209e5c000, 24576, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x17000) = 0x7fd209e5c000

mmap(0x7fd209e62000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1c000) = 0x7fd209e62000

mmap(0x7fd209e64000, 13432, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7fd209e64000

close(3) = 0

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\300A\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\356\276]_K`\213\212S\354Dkc\230\33\272"..., 68, 880) = 68

fstat(3, {st_mode=S_IFREG|0755, st_size=2029592, ...}) = 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\356\276]_K`\213\212S\354Dkc\230\33\272"..., 68, 880) = 68

mmap(NULL, 2037344, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fd209c53000

mmap(0x7fd209c75000, 1540096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x22000) = 0x7fd209c75000

mmap(0x7fd209ded000, 319488, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x19a000) = 0x7fd209ded000

mmap(0x7fd209e3b000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1e7000) = 0x7fd209e3b000

mmap(0x7fd209e41000, 13920, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7fd209e41000

close(3) = 0

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\3006\0\0\0\0\0\0"..., 832) = 832

fstat(3, {st_mode=S_IFREG|0644, st_size=146000, ...}) = 0

mmap(NULL, 148776, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fd209c2e000

mmap(0x7fd209c31000, 114688, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x3000) = 0x7fd209c31000

mmap(0x7fd209c4d000, 16384, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1f000) = 0x7fd209c4d000

mmap(0x7fd209c51000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x22000) = 0x7fd209c51000

close(3) = 0

mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7fd209c2c000

mmap(NULL, 12288, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7fd209c29000

arch_prctl(ARCH_SET_FS, 0x7fd209c29740) = 0

mprotect(0x7fd209e3b000, 16384, PROT_READ) = 0

mprotect(0x7fd209c51000, 4096, PROT_READ) = 0

mprotect(0x7fd209e62000, 4096, PROT_READ) = 0

mprotect(0x7fd209fb5000, 4096, PROT_READ) = 0

mprotect(0x7fd20a213000, 45056, PROT_READ) = 0

mprotect(0x5561a4e94000, 4096, PROT_READ) = 0

mprotect(0x7fd20a261000, 4096, PROT_READ) = 0

munmap(0x7fd20a227000, 50863) = 0

set_tid_address(0x7fd209c29a10) = 17848

set_robust_list(0x7fd209c29a20, 24) = 0

rt_sigaction(SIGRTMIN, {sa_handler=0x7fd209e4bbf0, sa_mask=[], sa_flags=SA_RESTORER|SA_SIGINFO, sa_restorer=0x7fd209e59420}, NULL, 8) = 0

rt_sigaction(SIGRT_1, {sa_handler=0x7fd209e4bc90, sa_mask=[], sa_flags=SA_RESTORER|SA_RESTART|SA_SIGINFO, sa_restorer=0x7fd209e59420}, 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

futex(0x7fd20a2217fc, FUTEX_WAKE_PRIVATE, 2147483647) = 0

futex(0x7fd20a221808, FUTEX_WAKE_PRIVATE, 2147483647) = 0

brk(NULL) = 0x5561a7259000

brk(0x5561a727a000) = 0x5561a727a000

fstat(1, {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0x6), ...}) = 0

write(1, "\320\222\320\262\320\265\320\264\320\270\321\202\320\265\320\272\320\276\320\273\320\270\321\207\320\265\321\201\321\202\320"..., 52Введите количество потоков:) = 52

fstat(0, {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0x6), ...}) = 0

read(0, 1

"1\n", 1024) = 2

write(1, "\n", 1

) = 1

write(1, "\320\222\320\262\320\265\320\264\320\270\321\202\320\265\321\200\320\260\320\267\320\274\320\265\321\200 \320\274\320\260"..., 44Введите размер массива:) = 44

read(0, 10

"10\n", 1024) = 3

write(1, "\n", 1

) = 1

write(1, "\n", 1

) = 1

mmap(NULL, 8392704, PROT_NONE, MAP_PRIVATE|MAP_ANONYMOUS|MAP_STACK, -1, 0) = 0x7fd209428000

mprotect(0x7fd209429000, 8388608, PROT_READ|PROT_WRITE) = 0

clone(child_stack=0x7fd209c27fb0, flags=CLONE_VM|CLONE_FS|CLONE_FILES|CLONE_SIGHAND|CLONE_THREAD|CLONE_SYSVSEM|CLONE_SETTLS|CLONE_PARENT_SETTID|CLONE_CHILD_CLEARTID, parent_tid=[17924], tls=0x7fd209c28700, child_tidptr=0x7fd209c289d0) = 17924

futex(0x5561a5329108, FUTEX_WAKE_PRIVATE, 1) = 1

futex(0x7fd209c289d0, FUTEX_WAIT, 17924, NULL) = 0

write(1, "Time taken: 0.00773119 seconds\n", 31Time taken: 0.00773119 seconds

) = 31

lseek(0, -1, SEEK_CUR) = -1 ESPIPE (Illegal seek)

exit_group(0) = ?

+++ exited with 0 +++

alexander@DESKTOP-KNBCFCI:~/labsos/lab2/build$

Лабораторная работа 3

alexander@DESKTOP-KNBCFCI:~/labsos/lab3/build$ strace ./main

execve("./main", ["./main"], 0x7fff076c1910 /* 26 vars */) = 0

brk(NULL) = 0x5625ddb95000

arch_prctl(0x3001 /* ARCH_??? */, 0x7ffe4c489160) = -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

fstat(3, {st_mode=S_IFREG|0644, st_size=50863, ...}) = 0

mmap(NULL, 50863, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7fe5c3871000

close(3) = 0

openat(AT_FDCWD, "/lib/x86_64-linux-gnu/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 \0\0\0\0\0\0"..., 832) = 832

fstat(3, {st_mode=S_IFREG|0644, st_size=35960, ...}) = 0

mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7fe5c386f000

mmap(NULL, 39904, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fe5c3865000

mmap(0x7fe5c3867000, 16384, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x2000) = 0x7fe5c3867000

mmap(0x7fe5c386b000, 8192, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x6000) = 0x7fe5c386b000

mmap(0x7fe5c386d000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x7000) = 0x7fe5c386d000

close(3) = 0

openat(AT_FDCWD, "/lib/x86_64-linux-gnu/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\220q\0\0\0\0\0\0"..., 832) = 832

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\f\4K\246\21\256\356\256\273\203t\346`\6\0374"..., 68, 824) = 68

fstat(3, {st_mode=S_IFREG|0755, st_size=157224, ...}) = 0

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0\f\4K\246\21\256\356\256\273\203t\346`\6\0374"..., 68, 824) = 68

mmap(NULL, 140408, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fe5c3842000

mmap(0x7fe5c3848000, 69632, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x6000) = 0x7fe5c3848000

mmap(0x7fe5c3859000, 24576, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x17000) = 0x7fe5c3859000

mmap(0x7fe5c385f000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1c000) = 0x7fe5c385f000

mmap(0x7fe5c3861000, 13432, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7fe5c3861000

close(3) = 0

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\300A\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\356\276]_K`\213\212S\354Dkc\230\33\272"..., 68, 880) = 68

fstat(3, {st_mode=S_IFREG|0755, st_size=2029592, ...}) = 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\356\276]_K`\213\212S\354Dkc\230\33\272"..., 68, 880) = 68

mmap(NULL, 2037344, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7fe5c3650000

mmap(0x7fe5c3672000, 1540096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x22000) = 0x7fe5c3672000

mmap(0x7fe5c37ea000, 319488, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x19a000) = 0x7fe5c37ea000

mmap(0x7fe5c3838000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1e7000) = 0x7fe5c3838000

mmap(0x7fe5c383e000, 13920, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7fe5c383e000

close(3) = 0

mmap(NULL, 12288, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7fe5c364d000

arch_prctl(ARCH_SET_FS, 0x7fe5c364d740) = 0

mprotect(0x7fe5c3838000, 16384, PROT_READ) = 0

mprotect(0x7fe5c385f000, 4096, PROT_READ) = 0

mprotect(0x7fe5c386d000, 4096, PROT_READ) = 0

mprotect(0x5625dcaff000, 4096, PROT_READ) = 0

mprotect(0x7fe5c38ab000, 4096, PROT_READ) = 0

munmap(0x7fe5c3871000, 50863) = 0

set_tid_address(0x7fe5c364da10) = 18533

set_robust_list(0x7fe5c364da20, 24) = 0

rt_sigaction(SIGRTMIN, {sa_handler=0x7fe5c3848bf0, sa_mask=[], sa_flags=SA_RESTORER|SA_SIGINFO, sa_restorer=0x7fe5c3856420}, NULL, 8) = 0

rt_sigaction(SIGRT_1, {sa_handler=0x7fe5c3848c90, sa_mask=[], sa_flags=SA_RESTORER|SA_RESTART|SA_SIGINFO, sa_restorer=0x7fe5c3856420}, 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=1568470, f_bfree=1568470, f_bavail=1568470, f_files=1568470, f_ffree=1568469, f_fsid={val=[0, 0]}, f_namelen=255, f_frsize=4096, f_flags=ST_VALID|ST_NOSUID|ST_NODEV|ST_NOATIME}) = 0

futex(0x7fe5c3864390, FUTEX_WAKE_PRIVATE, 2147483647) = 0

openat(AT_FDCWD, "/dev/shm/sem.semafor0", O_RDWR|O_NOFOLLOW) = -1 ENOENT (No such file or directory)

getpid() = 18533

lstat("/dev/shm/VU2WQy", 0x7ffe4c488da0) = -1 ENOENT (No such file or directory)

openat(AT_FDCWD, "/dev/shm/VU2WQy", O_RDWR|O_CREAT|O_EXCL, 0700) = 3

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

mmap(NULL, 32, PROT_READ|PROT_WRITE, MAP_SHARED, 3, 0) = 0x7fe5c38aa000

link("/dev/shm/VU2WQy", "/dev/shm/sem.semafor0") = 0

fstat(3, {st_mode=S_IFREG|0700, st_size=32, ...}) = 0

brk(NULL) = 0x5625ddb95000

brk(0x5625ddbb6000) = 0x5625ddbb6000

unlink("/dev/shm/VU2WQy") = 0

close(3) = 0

openat(AT_FDCWD, "/dev/shm/sem.semafor1", O_RDWR|O_NOFOLLOW) = -1 ENOENT (No such file or directory)

getpid() = 18533

lstat("/dev/shm/X86jay", 0x7ffe4c488da0) = -1 ENOENT (No such file or directory)

openat(AT_FDCWD, "/dev/shm/X86jay", O_RDWR|O_CREAT|O_EXCL, 0700) = 3

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

mmap(NULL, 32, PROT_READ|PROT_WRITE, MAP_SHARED, 3, 0) = 0x7fe5c387d000

link("/dev/shm/X86jay", "/dev/shm/sem.semafor1") = 0

fstat(3, {st_mode=S_IFREG|0700, st_size=32, ...}) = 0

unlink("/dev/shm/X86jay") = 0

close(3) = 0

openat(AT_FDCWD, "/dev/shm/sem.semafor2", O_RDWR|O_NOFOLLOW) = -1 ENOENT (No such file or directory)

getpid() = 18533

lstat("/dev/shm/h3viIy", 0x7ffe4c488da0) = -1 ENOENT (No such file or directory)

openat(AT_FDCWD, "/dev/shm/h3viIy", O_RDWR|O_CREAT|O_EXCL, 0700) = 3

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

mmap(NULL, 32, PROT_READ|PROT_WRITE, MAP_SHARED, 3, 0) = 0x7fe5c387c000

link("/dev/shm/h3viIy", "/dev/shm/sem.semafor2") = 0

fstat(3, {st_mode=S_IFREG|0700, st_size=32, ...}) = 0

unlink("/dev/shm/h3viIy") = 0

close(3) = 0

openat(AT_FDCWD, "/dev/shm/mmap_file", O_RDWR|O_CREAT|O_NOFOLLOW|O_CLOEXEC, 0700) = 3

clone(child_stack=NULL, flags=CLONE_CHILD_CLEARTID|CLONE_CHILD_SETTID|SIGCHLD, child_tidptr=0x7fe5c364da10) = 18534

clone(child_stack=NULL, flags=CLONE_CHILD_CLEARTID|CLONE_CHILD_SETTID|SIGCHLD, child_tidptr=0x7fe5c364da10) = 18535

write(1, "Enter a string: \n\0\0\0", 20Enter a string:

) = 20

read(0, aaa bbb ddd lll aldj

"aaa bbb ddd lll aldj\n", 1024) = 26

ftruncate(3, 26) = 0

mmap(NULL, 26, PROT_READ|PROT_WRITE, MAP_SHARED, 3, 0) = 0x7fe5c387b000

futex(0x7fe5c38aa000, FUTEX_WAKE, 1) = 1

futex(0x7fe5c387c000, FUTEX_WAIT_BITSET|FUTEX_CLOCK_REALTIME, 0, NULL, FUTEX_BITSET_MATCH_ANY) = -1 EAGAIN (Resource temporarily unavailable)

fstat(1, {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0x6), ...}) = 0

write(1, "\320\237\320\265\321\207\320\260\321\202\320\260\321\216\321\200\320\265\320\267\321\203\320\273\321\214\321\202\320\260\321"..., 35Печатаю результат:

) = 35

write(1, "AAABBBDDDLLL ALDJ\n", 18AAABBBDDDLLL ALDJ

) = 18

write(1, "\263\30\n", 3 

) = 3

read(0, fsdfkj sldfkjsd sldkfj jf jksdjfl

"fsdfkj sldfkjsd sldkfj jf j"..., 1024) = 39

ftruncate(3, 39) = 0

mmap(NULL, 39, PROT_READ|PROT_WRITE, MAP_SHARED, 3, 0) = 0x7fe5c387a000

futex(0x7fe5c38aa000, FUTEX_WAKE, 1) = 1

futex(0x7fe5c387c000, FUTEX_WAIT_BITSET|FUTEX_CLOCK_REALTIME, 0, NULL, FUTEX_BITSET_MATCH_ANY) = -1 EAGAIN (Resource temporarily unavailable)

write(1, "\320\237\320\265\321\207\320\260\321\202\320\260\321\216 \321\200\320\265\320\267\321\203\320\273\321\214\321\202\320\260\321"..., 35Печатаю результат:

) = 35

write(1, "FSDFKJSLDFKJSDSLDKFJJF JKSDJFL\n", 31FSDFKJSLDFKJSDSLDKFJJF JKSDJFL

) = 31

write(1, "\n", 1

) = 1

read(0, "", 1024) = 0

unlink("/mmap_file") = -1 ENOENT (No such file or directory)

dup(2) = 4

fcntl(4, F_GETFL) = 0x402 (flags O_RDWR|O_APPEND)

fstat(4, {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0x6), ...}) = 0

write(4, "\320\236\321\210\320\270\320\261\320\272\320\260 \320\277\321\200\320\270 unlink: No s"..., 54Ошибка при unlink: No such file or directory

) = 54

close(4) = 0

kill(18534, SIGTERM) = 0

kill(18535, SIGTERM) = 0

--- SIGCHLD {si_signo=SIGCHLD, si_code=CLD_EXITED, si_pid=18534, si_uid=1000, si_status=0, si_utime=0, si_stime=0} ---

--- SIGCHLD {si_signo=SIGCHLD, si_code=CLD_EXITED, si_pid=18535, si_uid=1000, si_status=0, si_utime=0, si_stime=0} ---

munmap(0x7fe5c38aa000, 32) = 0

unlink("/dev/shm/sem.semafor0") = 0

munmap(0x7fe5c387d000, 32) = 0

unlink("/dev/shm/sem.semafor1") = 0

munmap(0x7fe5c387c000, 32) = 0

unlink("/dev/shm/sem.semafor2") = 0

exit_group(0) = ?

+++ exited with 0 +++

alexander@DESKTOP-KNBCFCI:~/labsos/lab3/build$

Лабораторная работа 4

alexander@DESKTOP-KNBCFCI:~/labsos/lab4/build$ strace ./main_exe

execve("./main_exe", ["./main_exe"], 0x7fff0baa86b0 /* 26 vars */) = 0

brk(NULL) = 0x558978dbf000

arch_prctl(0x3001 /* ARCH_??? */, 0x7ffcf149d760) = -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

fstat(3, {st_mode=S_IFREG|0644, st_size=50863, ...}) = 0

mmap(NULL, 50863, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7f70887ef000

close(3) = 0

openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libdl.so.2", O_RDONLY|O_CLOEXEC) = 3

read(3, "\177ELF\2\1\1\0\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0 \22\0\0\0\0\0\0"..., 832) = 832

fstat(3, {st_mode=S_IFREG|0644, st_size=18848, ...}) = 0

mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7f70887ed000

mmap(NULL, 20752, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f70887e7000

mmap(0x7f70887e8000, 8192, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1000) = 0x7f70887e8000

mmap(0x7f70887ea000, 4096, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x3000) = 0x7f70887ea000

mmap(0x7f70887eb000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x3000) = 0x7f70887eb000

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@E\n\0\0\0\0\0"..., 832) = 832

fstat(3, {st_mode=S_IFREG|0644, st_size=2526680, ...}) = 0

mmap(NULL, 2544064, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f7088579000

mprotect(0x7f7088615000, 1835008, PROT_NONE) = 0

mmap(0x7f7088615000, 1253376, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x9c000) = 0x7f7088615000

mmap(0x7f7088747000, 577536, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1ce000) = 0x7f7088747000

mmap(0x7f70887d5000, 57344, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x25b000) = 0x7f70887d5000

mmap(0x7f70887e3000, 12736, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7f70887e3000

close(3) = 0

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\300A\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\356\276]_K`\213\212S\354Dkc\230\33\272"..., 68, 880) = 68

fstat(3, {st_mode=S_IFREG|0755, st_size=2029592, ...}) = 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\356\276]_K`\213\212S\354Dkc\230\33\272"..., 68, 880) = 68

mmap(NULL, 2037344, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f7088387000

mmap(0x7f70883a9000, 1540096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x22000) = 0x7f70883a9000

mmap(0x7f7088521000, 319488, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x19a000) = 0x7f7088521000

mmap(0x7f708856f000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1e7000) = 0x7f708856f000

mmap(0x7f7088575000, 13920, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7f7088575000

close(3) = 0

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\323\0\0\0\0\0\0"..., 832) = 832

fstat(3, {st_mode=S_IFREG|0644, st_size=1369384, ...}) = 0

mmap(NULL, 1368336, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f7088238000

mmap(0x7f7088245000, 684032, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0xd000) = 0x7f7088245000

mmap(0x7f70882ec000, 626688, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0xb4000) = 0x7f70882ec000

mmap(0x7f7088385000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x14c000) = 0x7f7088385000

close(3) = 0

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\3\0>\0\1\0\0\0\3006\0\0\0\0\0\0"..., 832) = 832

fstat(3, {st_mode=S_IFREG|0644, st_size=146000, ...}) = 0

mmap(NULL, 148776, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f7088213000

mmap(0x7f7088216000, 114688, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x3000) = 0x7f7088216000

mmap(0x7f7088232000, 16384, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1f000) = 0x7f7088232000

mmap(0x7f7088236000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x22000) = 0x7f7088236000

close(3) = 0

mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7f7088211000

mmap(NULL, 12288, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7f708820e000

arch_prctl(ARCH_SET_FS, 0x7f708820e740) = 0

mprotect(0x7f708856f000, 16384, PROT_READ) = 0

mprotect(0x7f7088236000, 4096, PROT_READ) = 0

mprotect(0x7f7088385000, 4096, PROT_READ) = 0

mprotect(0x7f70887d5000, 45056, PROT_READ) = 0

mprotect(0x7f70887eb000, 4096, PROT_READ) = 0

mprotect(0x558977cd2000, 4096, PROT_READ) = 0

mprotect(0x7f7088829000, 4096, PROT_READ) = 0

munmap(0x7f70887ef000, 50863) = 0

brk(NULL) = 0x558978dbf000

brk(0x558978de0000) = 0x558978de0000

fstat(1, {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0x6), ...}) = 0

write(1, "Enter interested lib : ", 23Enter interested lib :) = 23

fstat(0, {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0x6), ...}) = 0

read(0, 1

"1\n", 1024) = 2

openat(AT_FDCWD, "/home/alexander/labsos/lab4/build/libMyLib1.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\340\20\0\0\0\0\0\0"..., 832) = 832

fstat(3, {st_mode=S_IFREG|0755, st_size=16840, ...}) = 0

mmap(NULL, 16464, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f70887f7000

mmap(0x7f70887f8000, 4096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1000) = 0x7f70887f8000

mmap(0x7f70887f9000, 4096, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x2000) = 0x7f70887f9000

mmap(0x7f70887fa000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x2000) = 0x7f70887fa000

close(3) = 0

mprotect(0x7f70887fa000, 4096, PROT_READ) = 0

write(1, "\320\222\320\262\320\265\320\264\320\270\321\202\320\265 1 \320\264\320\273\321\217 \320\262\321\213\320\277\320\276"..., 115Введите 1 для выполнения сортировки или 2 для подсчета числа пи

) = 115

read(0, 2

"2\n", 1024) = 2

write(1, "\320\222\320\262\320\265\320\264\320\270\321\202\320\265 \320\264\320\273\320\270\320\275\321\203 \321\200\321\217\320\264"..., 80Введите длину ряда K для вычисления числа π:) = 80

read(0, 100

"100\n", 1024) = 4

write(1, "\320\247\320\270\321\201\320\273\320\276 \317\200 \320\277\321\200\320\270 \320\270\321\201\320\277\320\276\320\273\321"..., 87Число π при использовании ряда длиной K = 100: 3.13159

) = 87

write(1, "\320\222\320\262\320\265\320\264\320\270\321\202\320\265 1 \320\264\320\273\321\217 \320\262\321\213\320\277\320\276"..., 115Введите 1 для выполнения сортировки или 2 для подсчета числа пи

) = 115

read(0, 2

"2\n", 1024) = 2

write(1, "\320\222\320\262\320\265\320\264\320\270\321\202\320\265 \320\264\320\273\320\270\320\275\321\203 \321\200\321\217\320\264"..., 80Введите длину ряда K для вычисления числа π:) = 80

read(0, 20

"20\n", 1024) = 3

write(1, "\320\247\320\270\321\201\320\273\320\276 \317\200 \320\277\321\200\320\270 \320\270\321\201\320\277\320\276\320\273\321"..., 86Число π при использовании ряда длиной K = 20: 3.09162

) = 86

write(1, "\320\222\320\262\320\265\320\264\320\270\321\202\320\265 1 \320\264\320\273\321\217 \320\262\321\213\320\277\320\276"..., 115Введите 1 для выполнения сортировки или 2 для подсчета числа пи

) = 115

read(0, 1

"1\n", 1024) = 2

write(1, "\320\222\320\262\320\265\320\264\320\270\321\202\320\265 \321\200\320\260\320\267\320\274\320\265\321\200 \320\274\320\260"..., 44Введите размер массива:) = 44

read(0, 5

"5\n", 1024) = 2

write(1, "\n", 1

) = 1

write(1, "\320\222\320\262\320\265\320\264\320\270\321\202\320\265 0 \321\215\320\273\320\265\320\274\320\265\320\275\321\202:"..., 33Введите 0 элемент:) = 33

read(0, 6

"6\n", 1024) = 2

write(1, "\320\222\320\262\320\265\320\264\320\270\321\202\320\265 1 \321\215\320\273\320\265\320\274\320\265\320\275\321\202:"..., 33Введите 1 элемент:) = 33

read(0, 5

"5\n", 1024) = 2

write(1, "\320\222\320\262\320\265\320\264\320\270\321\202\320\265 2 \321\215\320\273\320\265\320\274\320\265\320\275\321\202:"..., 33Введите 2 элемент:) = 33

read(0, 4

"4\n", 1024) = 2

write(1, "\320\222\320\262\320\265\320\264\320\270\321\202\320\265 3 \321\215\320\273\320\265\320\274\320\265\320\275\321\202:"..., 33Введите 3 элемент:) = 33

read(0, 6

"6\n", 1024) = 2

write(1, "\320\222\320\262\320\265\320\264\320\270\321\202\320\265 4 \321\215\320\273\320\265\320\274\320\265\320\275\321\202:"..., 33Введите 4 элемент:) = 33

```
read(0, 3
"3\n", 1024)                    = 2
write(1, "\n", 1
)                       = 1
write(1,
"\320\236\321\202\321\201\320\276\321\200\321\202\320\270\321\200\320\276\320\262\320\260\320\275\320\275\321\213\320\271 \320"..., 56Отсортированный массив: 3 4 5 6 6
) = 56
write(1, "\320\222\320\262\320\265\320\264\320\270\321\202\320\265 1 \320\264\320\273\321\217 \320\262\321\213\320\277\320\276"..., 115Введите 1 для выполнения сортировки или 2 для подсчета числа пи
) = 115
read(0, "", 1024)                       = 0
munmap(0x7f70887f7000, 16464)           = 0
exit_group(0)                           = ?
+++ exited with 0 +++
```

Вывод

Данная лабораторная работа представляет из себя анализ предыдущих лабораторных работ с помощью такого инструмента, как strace. С её помощью можно смотреть, какие системные вызовы происходят во время выполнения программы. Это очень полезный инструмент для более глубокого понимания, как работает написанный тобою код, поскольку предоставляется возможность наблюдать, в какой момент происходит выделение памяти, создание процессов, потоков, и их закрытие, подключение и отключение примитивов синхронизации, запись в память и чтение из памяти. В процессе работы над лабораторными работами по курсу операционных систем много раз пришлось обращаться к strace для отладки кода, который выполнялся с ошибками. В общем, использование этой утилиты не только облегчает отладку кода, но и углубляет его понимание.