Московский Авиационный Институт

(Национальный Исследовательский Университет)

Факультет информационных технологий и прикладной математики

Кафедра вычислительной математики и программирования

Лабораторная работа №8 по курсу

«Операционные системы»

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Дата: _____
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Постановка задачи

Цель работы
Приобретение практических навыков диагностики работы программного обеспечения.

Задание
При выполнении последующих лабораторных работ необходимо продемонстрировать ключевые системные вызовы, которые в них используются и то, что их использование соответствует варианту ЛР.

Для отчета проведу диагностику второй ЛР.

Общие сведения о программе

В программе используются следующие системные вызовы:

1. **read** – читает из потока f в переменную s n байт.
2. **write** – записывает в поток f значение переменной s размером в n байт.
3. **execl** – подменяет образ текущего процесса процессом proc, и отправляет на вход proc входные данные arg1, agr2,…
4. **fork –** создает новый дочерний процесс. Возвращает pid.
5. **pipe –** создает новый pipe. Возвращает файловые дескрипторы fd1 и fd2 на чтение и запись соответственно.

Демонстрация работы программы

```
artyom@artyom-Dell-G15-5510:~/Документы/vs code
projects/OS_labs/lab1/build$ strace -f ./main
execve("./main", ["./main"], 0x7ffd05bf8b98 /* 62 vars */) = 0
brk(NULL)                               = 0x55c0bbd87000
arch_prctl(0x3001 /* ARCH_??? */, 0x7ffe6915ed30) = -1 EINVAL (Invalid
argument)
mmap(NULL, 8192, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7f335227d000
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=74475, ...},
AT_EMPTY_PATH) = 0
mmap(NULL, 74475, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7f335226a000
```

```
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\0\0\0\0\0\0\0"..., 832) =
832
newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=2260296, ...},
AT_EMPTY_PATH) = 0
mmap(NULL, 2275520, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3,
0) = 0x7f335203e000
mprotect(0x7f33520d8000, 1576960, PROT_NONE) = 0
mmap(0x7f33520d8000, 1118208, PROT_READ|PROT_EXEC,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x9a000) =
0x7f33520d8000
mmap(0x7f33521e9000, 454656, PROT_READ,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1ab000) =
0x7f33521e9000
mmap(0x7f3352259000, 57344, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x21a000) =
0x7f3352259000
mmap(0x7f3352267000, 10432, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7f3352267000
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\0\0\0\0\0\0\0"..., 832) =
832
newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=125488, ...},
AT_EMPTY_PATH) = 0
mmap(NULL, 127720, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3,
0) = 0x7f335201e000
mmap(0x7f3352021000, 94208, PROT_READ|PROT_EXEC,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x3000) =
0x7f3352021000
mmap(0x7f3352038000, 16384, PROT_READ,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1a000) =
0x7f3352038000
mmap(0x7f335203c000, 8192, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1d000) =
0x7f335203c000
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\0P\237\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"..., 48, 848) = 48
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0 =\340\2563\265?\356\25x\261\27\313A#\350"..., 68, 896) = 68
newfstatat(3, "", {st_mode=S_IFREG|0755, st_size=2216304, ...}, 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, 2260560, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f3351df6000
mmap(0x7f3351e1e000, 1658880, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x28000) = 0x7f3351e1e000
mmap(0x7f3351fb3000, 360448, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1bd000) = 0x7f3351fb3000
mmap(0x7f335200b000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x214000) = 0x7f335200b000
mmap(0x7f3352011000, 52816, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7f3352011000
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\0\0\0\0\0\0\0\0"..., 832) = 832
newfstatat(3, "", {st_mode=S_IFREG|0644, st_size=940560, ...}, AT_EMPTY_PATH) = 0
mmap(NULL, 942344, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7f3351d0f000
mmap(0x7f3351d1d000, 507904, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0xe000) = 0x7f3351d1d000
mmap(0x7f3351d99000, 372736, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x8a000) = 0x7f3351d99000
```

```
mmap(0x7f3351df4000, 8192, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0xe4000) =
0x7f3351df4000
close(3)                                = 0
mmap(NULL, 8192, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7f3351d0d000
arch_prctl(ARCH_SET_FS, 0x7f3351d0e3c0) = 0
set_tid_address(0x7f3351d0e690)         = 4007
set_robust_list(0x7f3351d0e6a0, 24)     = 0
rseq(0x7f3351d0ed60, 0x20, 0, 0x53053053) = 0
mprotect(0x7f335200b000, 16384, PROT_READ) = 0
mprotect(0x7f3351df4000, 4096, PROT_READ) = 0
mprotect(0x7f335203c000, 4096, PROT_READ) = 0
mmap(NULL, 8192, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7f3351d0b000
mprotect(0x7f3352259000, 45056, PROT_READ) = 0
mprotect(0x55c0ba5ce000, 4096, PROT_READ) = 0
mprotect(0x7f33522b7000, 8192, PROT_READ) = 0
prlimit64(0, RLIMIT_STACK, NULL, {rlim_cur=8192*1024,
rlim_max=RLIM64_INFINITY}) = 0
munmap(0x7f335226a000, 74475)           = 0
getrandom("\x20\xd0\xc3\xee\x03\x7f\x67\xd4", 8, GRND_NONBLOCK) = 8
brk(NULL)                               = 0x55c0bbd87000
brk(0x55c0bbda8000)                     = 0x55c0bbda8000
futex(0x7f335226777c, FUTEX_WAKE_PRIVATE, 2147483647) = 0
read(0, ../doc/test.txt
".", 1)                         = 1
read(0, ".", 1)                         = 1
read(0, "/", 1)                         = 1
read(0, "d", 1)                          = 1
read(0, "o", 1)                          = 1
read(0, "c", 1)                          = 1
read(0, "/", 1)                         = 1
read(0, "t", 1)                         = 1
read(0, "e", 1)                          = 1
read(0, "s", 1)                          = 1
read(0, "t", 1)                         = 1
read(0, ".", 1)                         = 1
read(0, "t", 1)                         = 1
read(0, "x", 1)                          = 1
read(0, "t", 1)                         = 1
read(0, "\n", 1)                         = 1
```

```
openat(AT_FDCWD, "../doc/test.txt", O_RDONLY) = 3
pipe2([4, 5], 0)                        = 0
clone(child_stack=NULL,
flags=CLONE_CHILD_CLEARTID|CLONE_CHILD_SETTID|SIGCHLDstrace:
Process 4028 attached
, child_tidptr=0x7f3351d0e690) = 4028
[pid  4028] set_robust_list(0x7f3351d0e6a0, 24 <unfinished ...>
[pid  4007] close(5 <unfinished ...>
[pid  4028] <... set_robust_list resumed>) = 0
[pid  4007] <... close resumed>)        = 0
[pid  4007] read(4,  <unfinished ...>
[pid  4028] close(4)                    = 0
[pid  4028] dup2(3, 0)                  = 0
[pid  4028] dup2(5, 1)                  = 1
[pid  4028] execve("./child", ["child"], 0x7ffe6915ef08 /* 62 vars */) = 0
[pid  4028] brk(NULL)                   = 0x563cf82ee000
[pid  4028] arch_prctl(0x3001 /* ARCH_??? */, 0x7ffc6e51dba0) = -1 EINVAL
(Invalid argument)
[pid  4028] mmap(NULL, 8192, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7f5372fd9000
[pid  4028] access("/etc/ld.so.preload", R_OK) = -1 ENOENT (No such file or
directory)
[pid  4028] openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC)
= 4
[pid  4028] newfstatat(4, "", {st_mode=S_IFREG|0644, st_size=74475, ...},
AT_EMPTY_PATH) = 0
[pid  4028] mmap(NULL, 74475, PROT_READ, MAP_PRIVATE, 4, 0) =
0x7f5372fc6000
[pid  4028] close(4)                    = 0
[pid  4028] openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libstdc++.so.6",
O_RDONLY|O_CLOEXEC) = 4
[pid  4028] read(4,
"\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0\0\0\0\0\0\0\0\0"..., 832) = 832
[pid  4028] newfstatat(4, "", {st_mode=S_IFREG|0644, st_size=2260296, ...},
AT_EMPTY_PATH) = 0
[pid  4028] mmap(NULL, 2275520, PROT_READ,
MAP_PRIVATE|MAP_DENYWRITE, 4, 0) = 0x7f5372d9a000
[pid  4028] mprotect(0x7f5372e34000, 1576960, PROT_NONE) = 0
[pid  4028] mmap(0x7f5372e34000, 1118208, PROT_READ|PROT_EXEC,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x9a000) =
0x7f5372e34000
```

```
[pid  4028] mmap(0x7f5372f45000, 454656, PROT_READ,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x1ab000) =
0x7f5372f45000
[pid  4028] mmap(0x7f5372fb5000, 57344, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x21a000) =
0x7f5372fb5000
[pid  4028] mmap(0x7f5372fc3000, 10432, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7f5372fc3000
[pid  4028] close(4)                    = 0
[pid  4028] openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libgcc_s.so.1",
O_RDONLY|O_CLOEXEC) = 4
[pid  4028] read(4,
"\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\0"..., 832) = 832
[pid  4028] newfstatat(4, "", {st_mode=S_IFREG|0644, st_size=125488, ...},
AT_EMPTY_PATH) = 0
[pid  4028] mmap(NULL, 127720, PROT_READ,
MAP_PRIVATE|MAP_DENYWRITE, 4, 0) = 0x7f5372d7a000
[pid  4028] mmap(0x7f5372d7d000, 94208, PROT_READ|PROT_EXEC,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x3000) =
0x7f5372d7d000
[pid  4028] mmap(0x7f5372d94000, 16384, PROT_READ,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x1a000) =
0x7f5372d94000
[pid  4028] mmap(0x7f5372d98000, 8192, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x1d000) =
0x7f5372d98000
[pid  4028] close(4)                    = 0
[pid  4028] openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libc.so.6",
O_RDONLY|O_CLOEXEC) = 4
[pid  4028] read(4,
"\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0P\237\2\0\0\0\0\0"..., 832) = 832
[pid  4028] pread64(4,
"\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
[pid  4028] pread64(4, "\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"..., 48, 848) = 48
[pid  4028] pread64(4, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0
=\340\2563\265?\356\25x\261\27\313A#\350"..., 68, 896) = 68
[pid  4028] newfstatat(4, "", {st_mode=S_IFREG|0755, st_size=2216304, ...},
AT_EMPTY_PATH) = 0
[pid  4028] pread64(4,
"\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
```

```
[pid  4028] mmap(NULL, 2260560, PROT_READ,
MAP_PRIVATE|MAP_DENYWRITE, 4, 0) = 0x7f5372b52000
[pid  4028] mmap(0x7f5372b7a000, 1658880, PROT_READ|PROT_EXEC,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x28000) =
0x7f5372b7a000
[pid  4028] mmap(0x7f5372d0f000, 360448, PROT_READ,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x1bd000) =
0x7f5372d0f000
[pid  4028] mmap(0x7f5372d67000, 24576, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x214000) =
0x7f5372d67000
[pid  4028] mmap(0x7f5372d6d000, 52816, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7f5372d6d000
[pid  4028] close(4)                    = 0
[pid  4028] openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libm.so.6",
O_RDONLY|O_CLOEXEC) = 4
[pid  4028] read(4,
"\177ELF\2\1\1\3\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0\0\0\0\0\0\0\0\0"..., 832) = 832
[pid  4028] newfstatat(4, "", {st_mode=S_IFREG|0644, st_size=940560, ...},
AT_EMPTY_PATH) = 0
[pid  4028] mmap(NULL, 942344, PROT_READ,
MAP_PRIVATE|MAP_DENYWRITE, 4, 0) = 0x7f5372a6b000
[pid  4028] mmap(0x7f5372a79000, 507904, PROT_READ|PROT_EXEC,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0xe000) =
0x7f5372a79000
[pid  4028] mmap(0x7f5372af5000, 372736, PROT_READ,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x8a000) =
0x7f5372af5000
[pid  4028] mmap(0x7f5372b50000, 8192, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0xe4000) =
0x7f5372b50000
[pid  4028] close(4)                    = 0
[pid  4028] mmap(NULL, 8192, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7f5372a69000
[pid  4028] arch_prctl(ARCH_SET_FS, 0x7f5372a6a3c0) = 0
[pid  4028] set_tid_address(0x7f5372a6a690) = 4028
[pid  4028] set_robust_list(0x7f5372a6a6a0, 24) = 0
[pid  4028] rseq(0x7f5372a6ad60, 0x20, 0, 0x53053053) = 0
[pid  4028] mprotect(0x7f5372d67000, 16384, PROT_READ) = 0
[pid  4028] mprotect(0x7f5372b50000, 4096, PROT_READ) = 0
[pid  4028] mprotect(0x7f5372d98000, 4096, PROT_READ) = 0
```

```
[pid  4028] mmap(NULL, 8192, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7f5372a67000
[pid  4028] mprotect(0x7f5372fb5000, 45056, PROT_READ) = 0
[pid  4028] mprotect(0x563cf6356000, 4096, PROT_READ) = 0
[pid  4028] mprotect(0x7f5373013000, 8192, PROT_READ) = 0
[pid  4028] prlimit64(0, RLIMIT_STACK, NULL, {rlim_cur=8192*1024,
rlim_max=RLIM64_INFINITY}) = 0
[pid  4028] munmap(0x7f5372fc6000, 74475) = 0
[pid  4028] getrandom("\x67\xfa\xa4\x42\x0c\xc1\x20\x29", 8,
GRND_NONBLOCK) = 8
[pid  4028] brk(NULL)                   = 0x563cf82ee000
[pid  4028] brk(0x563cf830f000)         = 0x563cf830f000
[pid  4028] futex(0x7f5372fc377c, FUTEX_WAKE_PRIVATE, 2147483647) = 0
[pid  4028] read(0, "4", 1)             = 1
[pid  4028] read(0, " ", 1)             = 1
[pid  4028] read(0, "3", 1)             = 1
[pid  4028] read(0, " ", 1)             = 1
[pid  4028] read(0, "2", 1)             = 1
[pid  4028] read(0, " ", 1)             = 1
[pid  4028] read(0, "1", 1)             = 1
[pid  4028] read(0, "\n", 1)            = 1
[pid  4028] write(1, "0", 1)            = 1
[pid  4007] <... read resumed>"0", 1)   = 1
[pid  4028] write(1, ".", 1 <unfinished ...>
[pid  4007] write(1, "0", 1 <unfinished ...>
0[pid  4028] <... write resumed>)        = 1
[pid  4007] <... write resumed>)        = 1
[pid  4028] write(1, "6", 1 <unfinished ...>
[pid  4007] read(4,  <unfinished ...>
[pid  4028] <... write resumed>)        = 1
[pid  4007] <... read resumed>".", 1)   = 1
[pid  4028] write(1, "6", 1 <unfinished ...>
[pid  4007] write(1, ".", 1. <unfinished ...>
[pid  4028] <... write resumed>)        = 1
[pid  4007] <... write resumed>)        = 1
[pid  4028] write(1, "6", 1 <unfinished ...>
[pid  4007] read(4,  <unfinished ...>
[pid  4028] <... write resumed>)        = 1
[pid  4007] <... read resumed>"6", 1)   = 1
[pid  4028] write(1, "6", 1 <unfinished ...>
[pid  4007] write(1, "6", 16 <unfinished ...>
[pid  4028] <... write resumed>)        = 1
```

```
[pid  4007] <... write resumed>)       = 1
[pid  4028] write(1, "6", 1 <unfinished ...>
[pid  4007] read(4,  <unfinished ...>
[pid  4028] <... write resumed>)       = 1
[pid  4007] <... read resumed>"6", 1)   = 1
[pid  4028] write(1, "7", 1 <unfinished ...>
[pid  4007] write(1, "6", 1 <unfinished ...>
6[pid  4028] <... write resumed>)       = 1
[pid  4007] <... write resumed>)       = 1
[pid  4028] write(1, "\n", 1 <unfinished ...>
[pid  4007] read(4,  <unfinished ...>
[pid  4028] <... write resumed>)       = 1
[pid  4007] <... read resumed>"6", 1)   = 1
[pid  4028] read(0,  <unfinished ...>
[pid  4007] write(1, "6", 1 <unfinished ...>
6[pid  4028] <... read resumed>"2", 1)   = 1
[pid  4007] <... write resumed>)       = 1
[pid  4028] read(0,  <unfinished ...>
[pid  4007] read(4,  <unfinished ...>
[pid  4028] <... read resumed>" ", 1)   = 1
[pid  4007] <... read resumed>"6", 1)   = 1
[pid  4028] read(0,  <unfinished ...>
[pid  4007] write(1, "6", 1 <unfinished ...>
6[pid  4028] <... read resumed>"3", 1)   = 1
[pid  4007] <... write resumed>)       = 1
[pid  4028] read(0,  <unfinished ...>
[pid  4007] read(4,  <unfinished ...>
[pid  4028] <... read resumed>"\n", 1)  = 1
[pid  4007] <... read resumed>"6", 1)   = 1
[pid  4028] write(1, "0", 1 <unfinished ...>
[pid  4007] write(1, "6", 16 <unfinished ...>
[pid  4028] <... write resumed>)       = 1
[pid  4007] <... write resumed>)       = 1
[pid  4028] write(1, ".", 1 <unfinished ...>
[pid  4007] read(4,  <unfinished ...>
[pid  4028] <... write resumed>)       = 1
[pid  4007] <... read resumed>"7", 1)   = 1
[pid  4028] write(1, "6", 1 <unfinished ...>
[pid  4007] write(1, "7", 17 <unfinished ...>
[pid  4028] <... write resumed>)       = 1
[pid  4007] <... write resumed>)       = 1
[pid  4028] write(1, "6", 1 <unfinished ...>
```

```
[pid  4007] read(4,  <unfinished ...>
[pid  4028] <... write resumed>)       = 1
[pid  4007] <... read resumed>"\n", 1)  = 1
[pid  4028] write(1, "6", 1 <unfinished ...>
[pid  4007] write(1, "\n", 1 <unfinished ...>

[pid  4028] <... write resumed>)       = 1
[pid  4007] <... write resumed>)       = 1
[pid  4028] write(1, "6", 1 <unfinished ...>
[pid  4007] read(4,  <unfinished ...>
[pid  4028] <... write resumed>)       = 1
[pid  4007] <... read resumed>"0", 1)   = 1
[pid  4028] write(1, "6", 1 <unfinished ...>
[pid  4007] write(1, "0", 1 <unfinished ...>
0[pid  4028] <... write resumed>)       = 1
[pid  4007] <... write resumed>)       = 1
[pid  4028] write(1, "7", 1 <unfinished ...>
[pid  4007] read(4,  <unfinished ...>
[pid  4028] <... write resumed>)       = 1
[pid  4007] <... read resumed>".", 1)   = 1
[pid  4028] write(1, "\n", 1 <unfinished ...>
[pid  4007] write(1, ".", 1 <unfinished ...>
.[pid  4028] <... write resumed>)       = 1
[pid  4007] <... write resumed>)       = 1
[pid  4028] read(0,  <unfinished ...>
[pid  4007] read(4,  <unfinished ...>
[pid  4028] <... read resumed>"1", 1)   = 1
[pid  4007] <... read resumed>"6", 1)   = 1
[pid  4028] read(0,  <unfinished ...>
[pid  4007] write(1, "6", 1 <unfinished ...>
6[pid  4028] <... read resumed>" ", 1)   = 1
[pid  4007] <... write resumed>)       = 1
[pid  4028] read(0,  <unfinished ...>
[pid  4007] read(4,  <unfinished ...>
[pid  4028] <... read resumed>"0", 1)   = 1
[pid  4007] <... read resumed>"6", 1)   = 1
[pid  4028] read(0,  <unfinished ...>
[pid  4007] write(1, "6", 1 <unfinished ...>
6[pid  4028] <... read resumed>"\n", 1)  = 1
[pid  4007] <... write resumed>)       = 1
[pid  4007] read(4, "6", 1)            = 1
[pid  4028] exit_group(1 <unfinished ...>
```

```
[pid  4007] write(1, "6", 1 <unfinished ...>
6[pid  4028] <... exit_group resumed>)   = ?
[pid  4007] <... write resumed>)        = 1
[pid  4007] read(4, "6", 1)             = 1
[pid  4007] write(1, "6", 16)           = 1
[pid  4007] read(4, "6", 1)             = 1
[pid  4007] write(1, "6", 16)           = 1
[pid  4007] read(4, "7", 1)             = 1
[pid  4028] +++ exited with 1 +++
--- SIGCHLD {si_signo=SIGCHLD, si_code=CLD_EXITED, si_pid=4028,
si_uid=1000, si_status=1, si_utime=0, si_stime=0} ---
write(1, "7", 17)                       = 1
read(4, "\n", 1)                        = 1
write(1, "\n", 1
)                       = 1
read(4, "", 1)                          = 0
write(2, "Y", 1Y)                       = 1
write(2, "o", 1o)                       = 1
write(2, "u", 1u)                       = 1
write(2, " ", 1 )                       = 1
write(2, "w", 1w)                       = 1
write(2, "a", 1a)                       = 1
write(2, "n", 1n)                       = 1
write(2, "t", 1t)                       = 1
write(2, " ", 1 )                       = 1
write(2, "t", 1t)                       = 1
write(2, "o", 1o)                       = 1
write(2, " ", 1 )                       = 1
write(2, "'", 1')                       = 1
write(2, "/", 1/)                       = 1
write(2, "'", 1')                       = 1
write(2, " ", 1 )                       = 1
write(2, "w", 1w)                       = 1
write(2, "i", 1i)                       = 1
write(2, "t", 1t)                       = 1
write(2, "h", 1h)                       = 1
write(2, " ", 1 )                       = 1
write(2, "z", 1z)                       = 1
write(2, "e", 1e)                       = 1
write(2, "r", 1r)                       = 1
write(2, "o", 1o)                       = 1
write(2, ".", 1.)                       = 1
```

```
write(2, "\n", 1
)                   = 1
write(2, "\0", 1)                   = 1
close(4)                          = 0
close(3)                          = 0
exit_group(0)                       = ?
+++ exited with 0 +++
```

Вывод

При выполнении данной лабораторной работы я научился работать с диагностикой программного обеспечения.