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Факультет информационных технологий и прикладной математики

Кафедра вычислительной математики и программирования

**Лабораторная работа №1 по курсу**

**«Операционные системы»**

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Подпись: \_\_\_\_\_\_\_\_\_\_\_

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**Репозиторий**

https://github.com/tonsoleils/OS

**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.

**Демонстрация ключевых системных вызовов**

**Лабораторная работа 2 (pipe, fork).**

Strace:

|  |
| --- |
| execve("./main", ["./main"], 0x7fffd5aac190 /\* 18 vars \*/) = 0  brk(NULL) = 0x7fffd6079000  arch\_prctl(0x3001 /\* ARCH\_??? \*/, 0x7fffde409040) = -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=33624, ...}) = 0  mmap(NULL, 33624, PROT\_READ, MAP\_PRIVATE, 3, 0) = 0x7fa16c2e4000  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\30x\346\264ur\f|Q\226\236i\253-'o"..., 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) = 0x7fa16c2e0000  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\30x\346\264ur\f|Q\226\236i\253-'o"..., 68, 880) = 68  mmap(NULL, 2037344, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7fa16c0b0000  mmap(0x7fa16c0d2000, 1540096, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x22000) = 0x7fa16c0d2000  mmap(0x7fa16c24a000, 319488, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x19a000) = 0x7fa16c24a000  mmap(0x7fa16c298000, 24576, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1e7000) = 0x7fa16c298000  mmap(0x7fa16c29e000, 13920, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7fa16c29e000  close(3) = 0  arch\_prctl(ARCH\_SET\_FS, 0x7fa16c2e14c0) = 0  mprotect(0x7fa16c298000, 16384, PROT\_READ) = 0  mprotect(0x7fa16c2f0000, 4096, PROT\_READ) = 0  mprotect(0x7fa16c2dd000, 4096, PROT\_READ) = 0  munmap(0x7fa16c2e4000, 33624) = 0  pipe([3, 4]) = 0  pipe([5, 6]) = 0  fstat(0, {st\_mode=S\_IFCHR|0660, st\_rdev=makedev(0x4, 0x1), ...}) = 0  ioctl(0, TCGETS, {B38400 opost isig icanon echo ...}) = 0  brk(NULL) = 0x7fffd6079000  brk(0x7fffd609a000) = 0x7fffd609a000  read(0, "a.txt\n", 4096) = 6  read(0, "b.txt\n", 4096) = 6  openat(AT\_FDCWD, "a.txt", O\_RDWR|O\_CREAT|O\_TRUNC, 0777) = 7  openat(AT\_FDCWD, "b.txt", O\_RDWR|O\_CREAT|O\_TRUNC, 0777) = 8  clone(child\_stack=NULL, flags=CLONE\_CHILD\_CLEARTID|CLONE\_CHILD\_SETTID|SIGCHLD, child\_tidptr=0x7fa16c2e1790) = 327  clone(child\_stack=NULL, flags=CLONE\_CHILD\_CLEARTID|CLONE\_CHILD\_SETTID|SIGCHLD, child\_tidptr=0x7fa16c2e1790) = 328  close(3) = 0  close(5) = 0  read(0, "Abcfsdf\n", 4096) = 8  write(4, "\10\0\0\0", 4) = 4  write(4, "Abcfsdf\n", 8) = 8  read(0, "FSDFsfsf4fsefsdf\n", 4096) = 17  write(6, "\22\0\0\0", 4) = 4  write(6, "FSDFsfsf4fsefsdf\n\0", 18) = 18  read(0, "sff\n", 4096) = 4  write(4, "\4\0\0\0", 4) = 4  write(4, "sff\n", 4) = 4  read(0, "fsssssssssssssssffffffffff\n", 4096) = 27  write(6, "\34\0\0\0", 4) = 4  write(6, "fsssssssssssssssffffffffff\n\0", 28) = 28  read(0, "dd\n", 4096) = 3  write(4, "\3\0\0\0", 4) = 4  write(4, "dd\n", 3) = 3  read(0, "", 4096) = 0  close(4) = 0  close(6) = 0  close(7) = 0  close(8) = 0  exit\_group(0) = ?  +++ exited with 0 +++ |

Желтым выделены системные вызовы pipe и clone, который соответствует вызову функции fork().

**Лабораторная работа 3 (pthread).**

Strace (trace=clone,exit,futex):

|  |
| --- |
| 370 futex(0x7f839216f6bc, FUTEX\_WAKE\_PRIVATE, 2147483647) = 0  370 futex(0x7f839216f6c8, FUTEX\_WAKE\_PRIVATE, 2147483647) = 0  370 clone(child\_stack=0x7f8391beffb0, flags=CLONE\_VM|CLONE\_FS|CLONE\_FILES|CLONE\_SIGHAND|CLONE\_THREAD|CLONE\_SYSVSEM|CLONE\_SETTLS|CLONE\_PARENT\_SETTID|CLONE\_CHILD\_CLEARTID, parent\_tid=[371], tls=0x7f8391bf0700, child\_tidptr=0x7f8391bf09d0) = 371  371 futex(0x7f83921e4280, FUTEX\_WAIT\_PRIVATE, 2, NULL <unfinished ...>  370 clone(child\_stack=0x7f83913dffb0, flags=CLONE\_VM|CLONE\_FS|CLONE\_FILES|CLONE\_SIGHAND|CLONE\_THREAD|CLONE\_SYSVSEM|CLONE\_SETTLS|CLONE\_PARENT\_SETTID|CLONE\_CHILD\_CLEARTID, parent\_tid=[372], tls=0x7f83913e0700, child\_tidptr=0x7f83913e09d0) = 372  370 futex(0x7f83921e4280, FUTEX\_WAKE\_PRIVATE, 1) = 1  371 <... futex resumed>) = 0  370 futex(0x7f83921e4280, FUTEX\_WAIT\_PRIVATE, 2, NULL <unfinished ...>  371 futex(0x7f83921e4280, FUTEX\_WAIT\_PRIVATE, 2, NULL <unfinished ...>  372 futex(0x7f83921e4280, FUTEX\_WAKE\_PRIVATE, 1 <unfinished ...>  370 <... futex resumed>) = 0  372 <... futex resumed>) = 1  372 exit(0 <unfinished ...>  370 clone(child\_stack=0x7f8390bcffb0, flags=CLONE\_VM|CLONE\_FS|CLONE\_FILES|CLONE\_SIGHAND|CLONE\_THREAD|CLONE\_SYSVSEM|CLONE\_SETTLS|CLONE\_PARENT\_SETTID|CLONE\_CHILD\_CLEARTID <unfinished ...>  372 <... exit resumed>) = ?  372 +++ exited with 0 +++  370 <... clone resumed>, parent\_tid=[373], tls=0x7f8390bd0700, child\_tidptr=0x7f8390bd09d0) = 373  370 futex(0x7f83921e4280, FUTEX\_WAKE\_PRIVATE, 1) = 1  371 <... futex resumed>) = 0  370 futex(0x7f83921e4280, FUTEX\_WAIT\_PRIVATE, 2, NULL <unfinished ...>  371 futex(0x7f83921e4280, FUTEX\_WAIT\_PRIVATE, 2, NULL <unfinished ...>  373 futex(0x7f83921e4280, FUTEX\_WAKE\_PRIVATE, 1 <unfinished ...>  370 <... futex resumed>) = 0  373 <... futex resumed>) = 1  373 exit(0 <unfinished ...>  370 clone(child\_stack=0x7f838bfeffb0, flags=CLONE\_VM|CLONE\_FS|CLONE\_FILES|CLONE\_SIGHAND|CLONE\_THREAD|CLONE\_SYSVSEM|CLONE\_SETTLS|CLONE\_PARENT\_SETTID|CLONE\_CHILD\_CLEARTID <unfinished ...>  373 <... exit resumed>) = ?  373 +++ exited with 0 +++  370 <... clone resumed>, parent\_tid=[374], tls=0x7f838bff0700, child\_tidptr=0x7f838bff09d0) = 374  370 futex(0x7f83921e4280, FUTEX\_WAKE\_PRIVATE, 1) = 1  371 <... futex resumed>) = 0  370 futex(0x7f8391bf09d0, FUTEX\_WAIT, 371, NULL <unfinished ...>  374 exit(0) = ?  374 +++ exited with 0 +++  371 futex(0x7f83921e4280, FUTEX\_WAKE\_PRIVATE, 1) = 0  371 exit(0) = ?  371 +++ exited with 0 +++  370 <... futex resumed>) = 0  370 +++ exited with 0 +++ |

Запуску программы с количество потоков 4 соответствует 4 вызова системного вызова clone(), а системные вызовы futex() соответствуют взаимодействию с мьютексами.

**Лабораторная работа 4 (fork, mmap, semaphore).**

Strace (trace=clone,mmap,futex):

|  |
| --- |
| 400 mmap(NULL, 33624, PROT\_READ, MAP\_PRIVATE, 3, 0) = 0x7f4dc5c37000  400 mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f4dc5c30000  400 mmap(NULL, 140408, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f4dc5c0d000  400 mmap(0x7f4dc5c13000, 69632, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x6000) = 0x7f4dc5c13000  400 mmap(0x7f4dc5c24000, 24576, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x17000) = 0x7f4dc5c24000  400 mmap(0x7f4dc5c2a000, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1c000) = 0x7f4dc5c2a000  400 mmap(0x7f4dc5c2c000, 13432, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7f4dc5c2c000  400 mmap(NULL, 2037344, PROT\_READ, MAP\_PRIVATE|MAP\_DENYWRITE, 3, 0) = 0x7f4dc5a10000  400 mmap(0x7f4dc5a32000, 1540096, PROT\_READ|PROT\_EXEC, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x22000) = 0x7f4dc5a32000  400 mmap(0x7f4dc5baa000, 319488, PROT\_READ, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x19a000) = 0x7f4dc5baa000  400 mmap(0x7f4dc5bf8000, 24576, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_DENYWRITE, 3, 0x1e7000) = 0x7f4dc5bf8000  400 mmap(0x7f4dc5bfe000, 13920, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_FIXED|MAP\_ANONYMOUS, -1, 0) = 0x7f4dc5bfe000  400 mmap(NULL, 12288, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0) = 0x7f4dc5a00000  400 mmap(NULL, 32, PROT\_READ|PROT\_WRITE, MAP\_SHARED|MAP\_ANONYMOUS, -1, 0) = 0x7f4dc5c6c000  400 mmap(NULL, 32, PROT\_READ|PROT\_WRITE, MAP\_SHARED|MAP\_ANONYMOUS, -1, 0) = 0x7f4dc5c3f000  400 mmap(NULL, 512, PROT\_READ|PROT\_WRITE, MAP\_SHARED|MAP\_ANONYMOUS, -1, 0) = 0x7f4dc5c3e000  400 mmap(NULL, 512, PROT\_READ|PROT\_WRITE, MAP\_SHARED|MAP\_ANONYMOUS, -1, 0) = 0x7f4dc5c3d000  400 clone(child\_stack=NULL, flags=CLONE\_CHILD\_CLEARTID|CLONE\_CHILD\_SETTID|SIGCHLD, child\_tidptr=0x7f4dc5a00a10) = 401  400 clone(child\_stack=NULL, flags=CLONE\_CHILD\_CLEARTID|CLONE\_CHILD\_SETTID|SIGCHLD <unfinished ...>  401 futex(0x7f4dc5c6c000, FUTEX\_WAIT\_BITSET|FUTEX\_CLOCK\_REALTIME, 0, NULL, FUTEX\_BITSET\_MATCH\_ANY <unfinished ...>  400 <... clone resumed>, child\_tidptr=0x7f4dc5a00a10) = 402  402 futex(0x7f4dc5c3f000, FUTEX\_WAIT\_BITSET|FUTEX\_CLOCK\_REALTIME, 0, NULL, FUTEX\_BITSET\_MATCH\_ANY <unfinished ...>  400 futex(0x7f4dc5c3f000, FUTEX\_WAKE, 1) = 1  402 <... futex resumed>) = 0  402 futex(0x7f4dc5c3f000, FUTEX\_WAIT\_BITSET|FUTEX\_CLOCK\_REALTIME, 0, NULL, FUTEX\_BITSET\_MATCH\_ANY <unfinished ...>  400 futex(0x7f4dc5c3f000, FUTEX\_WAKE, 1) = 1  402 <... futex resumed>) = 0  402 futex(0x7f4dc5c3f000, FUTEX\_WAIT\_BITSET|FUTEX\_CLOCK\_REALTIME, 0, NULL, FUTEX\_BITSET\_MATCH\_ANY <unfinished ...>  400 futex(0x7f4dc5c6c000, FUTEX\_WAKE, 1) = 1  401 <... futex resumed>) = 0  401 futex(0x7f4dc5c6c000, FUTEX\_WAIT\_BITSET|FUTEX\_CLOCK\_REALTIME, 0, NULL, FUTEX\_BITSET\_MATCH\_ANY <unfinished ...>  400 futex(0x7f4dc5c6c000, FUTEX\_WAKE, 1) = 1  401 <... futex resumed>) = 0  401 futex(0x7f4dc5c6c000, FUTEX\_WAIT\_BITSET|FUTEX\_CLOCK\_REALTIME, 0, NULL, FUTEX\_BITSET\_MATCH\_ANY <unfinished ...>  400 +++ exited with 0 +++ |

Желтым выделены вызовы системного вызова mmap, которые были вызваны из кода программы (первые два – для семафоров, следующие 2 – область, с помощью которой общались процессы). Так же можно увидеть два вызова clone, соответствующие созданию двух процессов-потомков, а так же системные вызовы futex, соответствующие семафорам.

**Лабораторная работа 5.**

Strace (trace=openat,read):

|  |
| --- |
| 426 openat(AT\_FDCWD, "/etc/ld.so.cache", O\_RDONLY|O\_CLOEXEC) = 3  426 openat(AT\_FDCWD, "/lib/x86\_64-linux-gnu/libdl.so.2", O\_RDONLY|O\_CLOEXEC) = 3  426 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  426 openat(AT\_FDCWD, "/lib/x86\_64-linux-gnu/libc.so.6", O\_RDONLY|O\_CLOEXEC) = 3  426 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  426 read(0, "0\n", 4096) = 2  426 read(0, "1\n", 4096) = 2  426 openat(AT\_FDCWD, "/etc/ld.so.cache", O\_RDONLY|O\_CLOEXEC) = 3  426 openat(AT\_FDCWD, "/lib/libfunc2.so", O\_RDONLY|O\_CLOEXEC) = 3  426 read(3, "\177ELF\2\1\1\0\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0\200\20\0\0\0\0\0\0"..., 832) = 832  426 read(0, "1\n", 4096) = 2  426 read(0, "100\n", 4096) = 4  426 read(0, "0\n", 4096) = 2  426 read(0, "1\n", 4096) = 2  426 openat(AT\_FDCWD, "/etc/ld.so.cache", O\_RDONLY|O\_CLOEXEC) = 3  426 openat(AT\_FDCWD, "/lib/libfunc1.so", O\_RDONLY|O\_CLOEXEC) = 3  426 read(3, "\177ELF\2\1\1\0\0\0\0\0\0\0\0\0\3\0>\0\1\0\0\0@\20\0\0\0\0\0\0"..., 832) = 832  426 read(0, "1\n", 4096) = 2  426 read(0, "100\n", 4096) = 4  426 read(0, "-1\n", 4096) = 3  426 +++ exited with 0 +++ |

Желтым выделены вызовы, которые соответствуют динамической загрузке библитеки (в данном случае, я 2 раза сменил имплементацию библиотеки).

**Лабораторная работа 6.**

Strace:

|  |
| --- |
| 459 socket(AF\_NETLINK, SOCK\_RAW|SOCK\_CLOEXEC, NETLINK\_ROUTE) = 11  459 bind(11, {sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, 12) = 0  459 getsockname(11, {sa\_family=AF\_NETLINK, nl\_pid=459, nl\_groups=00000000}, [12]) = 0  459 sendto(11, "\24\0\0\0\22\0\1\3\324\300\265c\0\0\0\0\0\0\0\0", 20, 0, {sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, 12) = 20  459 recvmsg(11, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=80, type=0x10 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855764, pid=459}, "\x00\x00\x01\x00\x21\x00\x00\x00\x43\x10\x00\x00\x00\x00\x00\x00\x0a\x00\x01\x00\x00\x15\x5d\x1c\xd9\x92\x00\x00\x08\x00\x1b\x00"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 80  459 recvmsg(11, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=76, type=0x10 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855764, pid=459}, "\x00\x00\x04\x03\x01\x00\x00\x00\x49\x00\x00\x00\x00\x00\x00\x00\x0a\x00\x01\x00\x00\x00\x00\x00\x00\x00\x00\x00\x08\x00\x1b\x00"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 76  459 recvmsg(11, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=80, type=0x10 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855764, pid=459}, "\x00\x00\x21\x03\x06\x00\x00\x00\x43\x10\x00\x00\x00\x00\x00\x00\x0a\x00\x01\x00\xd4\x1b\x81\x5c\x6a\x0b\x00\x00\x08\x00\x1b\x00"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 80  459 recvmsg(11, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=80, type=0x10 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855764, pid=459}, "\x00\x00\x21\x03\x08\x00\x00\x00\x40\x00\x00\x00\x00\x00\x00\x00\x0a\x00\x01\x00\xd6\x1b\x81\x5c\x6a\x0b\x00\x00\x08\x00\x1b\x00"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 80  459 recvmsg(11, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=80, type=0x10 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855764, pid=459}, "\x00\x00\x21\x03\x11\x00\x00\x00\x40\x00\x00\x00\x00\x00\x00\x00\x0a\x00\x01\x00\xf6\x1b\x81\x5c\x6a\x0b\x00\x00\x08\x00\x1b\x00"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 80  459 recvmsg(11, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=20, type=NLMSG\_DONE, flags=NLM\_F\_MULTI, seq=1672855764, pid=459}, 0}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 20  459 sendto(11, "\24\0\0\0\26\0\1\3\325\300\265c\0\0\0\0\0\0\0\0", 20, 0, {sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, 12) = 20  459 recvmsg(11, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=60, type=0x14 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855765, pid=459}, "\x02\x14\x00\x00\x21\x00\x00\x00\x08\x00\x01\x00\xac\x1c\x10\x01\x08\x00\x04\x00\xac\x1c\x1f\xff\x14\x00\x06\x00\xff\xff\xff\xff"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 60  459 recvmsg(11, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=64, type=0x14 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855765, pid=459}, "\x0a\x40\x00\xfd\x21\x00\x00\x00\x14\x00\x01\x00\xfe\x80\x00\x00\x00\x00\x00\x00\x70\x8c\x08\x08\xf1\x7b\x80\xbe\x14\x00\x06\x00"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 64  459 recvmsg(11, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=60, type=0x14 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855765, pid=459}, "\x02\x08\x00\x00\x01\x00\x00\x00\x08\x00\x01\x00\x7f\x00\x00\x01\x08\x00\x04\x00\x7f\xff\xff\xff\x14\x00\x06\x00\xff\xff\xff\xff"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 60  459 recvmsg(11, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=64, type=0x14 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855765, pid=459}, "\x0a\x80\x00\xfe\x01\x00\x00\x00\x14\x00\x01\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x01\x14\x00\x06\x00"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 64  459 recvmsg(11, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=60, type=0x14 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855765, pid=459}, "\x02\x18\x00\x00\x06\x00\x00\x00\x08\x00\x01\x00\xc0\xa8\xb2\x14\x08\x00\x04\x00\xc0\xa8\xb2\xff\x14\x00\x06\x00\xfc\x2e\x0d\x00"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 60  459 recvmsg(11, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=64, type=0x14 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855765, pid=459}, "\x0a\x40\x00\xfd\x06\x00\x00\x00\x14\x00\x01\x00\xfe\x80\x00\x00\x00\x00\x00\x00\xfb\xde\x04\xce\x6b\xd3\xd7\xc2\x14\x00\x06\x00"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 64  459 recvmsg(11, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=60, type=0x14 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855765, pid=459}, "\x02\x10\x00\x00\x08\x00\x00\x00\x08\x00\x01\x00\xa9\xfe\x38\xab\x08\x00\x04\x00\xa9\xfe\xff\xff\x14\x00\x06\x00\xff\xff\xff\xff"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 60  459 recvmsg(11, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=64, type=0x14 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855765, pid=459}, "\x0a\x40\x00\xfd\x08\x00\x00\x00\x14\x00\x01\x00\xfe\x80\x00\x00\x00\x00\x00\x00\xe5\x00\x9c\xaa\x70\x5c\xfb\xd7\x14\x00\x06\x00"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 64  459 recvmsg(11, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=60, type=0x14 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855765, pid=459}, "\x02\x10\x00\x00\x11\x00\x00\x00\x08\x00\x01\x00\xa9\xfe\xbe\x99\x08\x00\x04\x00\xa9\xfe\xff\xff\x14\x00\x06\x00\xff\xff\xff\xff"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 60  459 recvmsg(11, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=64, type=0x14 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855765, pid=459}, "\x0a\x40\x00\xfd\x11\x00\x00\x00\x14\x00\x01\x00\xfe\x80\x00\x00\x00\x00\x00\x00\xeb\x03\x30\x89\x12\x3c\x35\x8c\x14\x00\x06\x00"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 64  459 recvmsg(11, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=20, type=NLMSG\_DONE, flags=NLM\_F\_MULTI, seq=1672855765, pid=459}, 0}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 20  459 socket(AF\_INET, SOCK\_STREAM|SOCK\_CLOEXEC, IPPROTO\_TCP) = 11  459 setsockopt(11, SOL\_SOCKET, SO\_REUSEADDR, [1], 4) = 0  459 bind(11, {sa\_family=AF\_INET, sin\_port=htons(4041), sin\_addr=inet\_addr("127.0.0.1")}, 16) = 0  459 getsockname(11, {sa\_family=AF\_INET, sin\_port=htons(4041), sin\_addr=inet\_addr("127.0.0.1")}, [128->16]) = 0  459 getsockname(11, {sa\_family=AF\_INET, sin\_port=htons(4041), sin\_addr=inet\_addr("127.0.0.1")}, [128->16]) = 0  464 socket(AF\_INET, SOCK\_STREAM|SOCK\_CLOEXEC, IPPROTO\_TCP) = 11  461 setsockopt(12, SOL\_TCP, TCP\_NODELAY, [1], 4) = 0  461 getsockname(12, {sa\_family=AF\_INET, sin\_port=htons(4041), sin\_addr=inet\_addr("127.0.0.1")}, [128->16]) = 0  464 setsockopt(11, SOL\_TCP, TCP\_NODELAY, [1], 4) = 0  464 getsockname(11, {sa\_family=AF\_INET, sin\_port=htons(53029), sin\_addr=inet\_addr("127.0.0.1")}, [128->16]) = 0  461 sendto(12, "\377\0\0\0\0\0\0\0\1\177", 10, 0, NULL, 0) = 10  464 sendto(11, "\377\0\0\0\0\0\0\0\1\177\3", 11, 0, NULL, 0) = 11  461 sendto(12, "\3\1NULL\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0"..., 54, 0, NULL, 0) = 54  464 sendto(11, "\1NULL\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0"..., 53, 0, NULL, 0) = 53  464 sendto(11, "\4\31\5READY\vSocket-Type\0\0\0\3REP", 27, 0, NULL, 0) = 27  461 sendto(12, "\4&\5READY\vSocket-Type\0\0\0\3REQ\10Iden"..., 40, 0, NULL, 0) = 40  461 sendto(12, "\1\0\0\0041pid", 8, 0, NULL, 0) = 8  464 sendto(11, "\1\0\0\7OK: 462", 11, 0, NULL, 0) = 11  461 sendto(12, "\1\0\0\t1create 2", 13, 0, NULL, 0) = 13  462 socket(AF\_NETLINK, SOCK\_RAW|SOCK\_CLOEXEC, NETLINK\_ROUTE) = 12  462 bind(12, {sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, 12) = 0  462 getsockname(12, {sa\_family=AF\_NETLINK, nl\_pid=462, nl\_groups=00000000}, [12]) = 0  462 sendto(12, "\24\0\0\0\22\0\1\3\327\300\265c\0\0\0\0\0\0\0\0", 20, 0, {sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, 12) = 20  462 recvmsg(12, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=80, type=0x10 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855767, pid=462}, "\x00\x00\x01\x00\x21\x00\x00\x00\x43\x10\x00\x00\x00\x00\x00\x00\x0a\x00\x01\x00\x00\x15\x5d\x1c\xd9\x92\x00\x00\x08\x00\x1b\x00"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 80  462 recvmsg(12, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=76, type=0x10 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855767, pid=462}, "\x00\x00\x04\x03\x01\x00\x00\x00\x49\x00\x00\x00\x00\x00\x00\x00\x0a\x00\x01\x00\x00\x00\x00\x00\x00\x00\x00\x00\x08\x00\x1b\x00"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 76  462 recvmsg(12, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=80, type=0x10 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855767, pid=462}, "\x00\x00\x21\x03\x06\x00\x00\x00\x43\x10\x00\x00\x00\x00\x00\x00\x0a\x00\x01\x00\xd4\x1b\x81\x5c\x6a\x0b\x00\x00\x08\x00\x1b\x00"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 80  462 recvmsg(12, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=80, type=0x10 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855767, pid=462}, "\x00\x00\x21\x03\x08\x00\x00\x00\x40\x00\x00\x00\x00\x00\x00\x00\x0a\x00\x01\x00\xd6\x1b\x81\x5c\x6a\x0b\x00\x00\x08\x00\x1b\x00"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 80  462 recvmsg(12, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=80, type=0x10 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855767, pid=462}, "\x00\x00\x21\x03\x11\x00\x00\x00\x40\x00\x00\x00\x00\x00\x00\x00\x0a\x00\x01\x00\xf6\x1b\x81\x5c\x6a\x0b\x00\x00\x08\x00\x1b\x00"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 80  462 recvmsg(12, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=20, type=NLMSG\_DONE, flags=NLM\_F\_MULTI, seq=1672855767, pid=462}, 0}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 20  462 sendto(12, "\24\0\0\0\26\0\1\3\330\300\265c\0\0\0\0\0\0\0\0", 20, 0, {sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, 12) = 20  462 recvmsg(12, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=60, type=0x14 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855768, pid=462}, "\x02\x14\x00\x00\x21\x00\x00\x00\x08\x00\x01\x00\xac\x1c\x10\x01\x08\x00\x04\x00\xac\x1c\x1f\xff\x14\x00\x06\x00\xff\xff\xff\xff"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 60  462 recvmsg(12, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=64, type=0x14 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855768, pid=462}, "\x0a\x40\x00\xfd\x21\x00\x00\x00\x14\x00\x01\x00\xfe\x80\x00\x00\x00\x00\x00\x00\x70\x8c\x08\x08\xf1\x7b\x80\xbe\x14\x00\x06\x00"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 64  462 recvmsg(12, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=60, type=0x14 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855768, pid=462}, "\x02\x08\x00\x00\x01\x00\x00\x00\x08\x00\x01\x00\x7f\x00\x00\x01\x08\x00\x04\x00\x7f\xff\xff\xff\x14\x00\x06\x00\xff\xff\xff\xff"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 60  462 recvmsg(12, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=64, type=0x14 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855768, pid=462}, "\x0a\x80\x00\xfe\x01\x00\x00\x00\x14\x00\x01\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x00\x01\x14\x00\x06\x00"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 64  462 recvmsg(12, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=60, type=0x14 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855768, pid=462}, "\x02\x18\x00\x00\x06\x00\x00\x00\x08\x00\x01\x00\xc0\xa8\xb2\x14\x08\x00\x04\x00\xc0\xa8\xb2\xff\x14\x00\x06\x00\xfc\x2e\x0d\x00"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 60  462 recvmsg(12, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=64, type=0x14 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855768, pid=462}, "\x0a\x40\x00\xfd\x06\x00\x00\x00\x14\x00\x01\x00\xfe\x80\x00\x00\x00\x00\x00\x00\xfb\xde\x04\xce\x6b\xd3\xd7\xc2\x14\x00\x06\x00"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 64  462 recvmsg(12, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=60, type=0x14 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855768, pid=462}, "\x02\x10\x00\x00\x08\x00\x00\x00\x08\x00\x01\x00\xa9\xfe\x38\xab\x08\x00\x04\x00\xa9\xfe\xff\xff\x14\x00\x06\x00\xff\xff\xff\xff"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 60  462 recvmsg(12, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=64, type=0x14 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855768, pid=462}, "\x0a\x40\x00\xfd\x08\x00\x00\x00\x14\x00\x01\x00\xfe\x80\x00\x00\x00\x00\x00\x00\xe5\x00\x9c\xaa\x70\x5c\xfb\xd7\x14\x00\x06\x00"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 64  462 recvmsg(12, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=60, type=0x14 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855768, pid=462}, "\x02\x10\x00\x00\x11\x00\x00\x00\x08\x00\x01\x00\xa9\xfe\xbe\x99\x08\x00\x04\x00\xa9\xfe\xff\xff\x14\x00\x06\x00\xff\xff\xff\xff"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 60  462 recvmsg(12, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=64, type=0x14 /\* NLMSG\_??? \*/, flags=NLM\_F\_MULTI, seq=1672855768, pid=462}, "\x0a\x40\x00\xfd\x11\x00\x00\x00\x14\x00\x01\x00\xfe\x80\x00\x00\x00\x00\x00\x00\xeb\x03\x30\x89\x12\x3c\x35\x8c\x14\x00\x06\x00"...}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 64  462 recvmsg(12, {msg\_name={sa\_family=AF\_NETLINK, nl\_pid=0, nl\_groups=00000000}, msg\_namelen=12, msg\_iov=[{iov\_base={{len=20, type=NLMSG\_DONE, flags=NLM\_F\_MULTI, seq=1672855768, pid=462}, 0}, iov\_len=4096}], msg\_iovlen=1, msg\_controllen=0, msg\_flags=0}, 0) = 20  462 socket(AF\_INET, SOCK\_STREAM|SOCK\_CLOEXEC, IPPROTO\_TCP) = 12  462 setsockopt(12, SOL\_SOCKET, SO\_REUSEADDR, [1], 4) = 0  462 bind(12, {sa\_family=AF\_INET, sin\_port=htons(4042), sin\_addr=inet\_addr("127.0.0.1")}, 16) = 0  462 getsockname(12, {sa\_family=AF\_INET, sin\_port=htons(4042), sin\_addr=inet\_addr("127.0.0.1")}, [128->16]) = 0  462 getsockname(12, {sa\_family=AF\_INET, sin\_port=htons(4042), sin\_addr=inet\_addr("127.0.0.1")}, [128->16]) = 0  467 socket(AF\_INET, SOCK\_STREAM|SOCK\_CLOEXEC, IPPROTO\_TCP) = 11  464 setsockopt(13, SOL\_TCP, TCP\_NODELAY, [1], 4) = 0  464 getsockname(13, {sa\_family=AF\_INET, sin\_port=htons(4042), sin\_addr=inet\_addr("127.0.0.1")}, [128->16]) = 0  467 setsockopt(11, SOL\_TCP, TCP\_NODELAY, [1], 4) = 0  467 getsockname(11, {sa\_family=AF\_INET, sin\_port=htons(53051), sin\_addr=inet\_addr("127.0.0.1")}, [128->16]) = 0  464 sendto(13, "\377\0\0\0\0\0\0\0\1\177", 10, 0, NULL, 0) = 10  467 sendto(11, "\377\0\0\0\0\0\0\0\1\177", 10, 0, NULL, 0) = 10  464 sendto(13, "\3", 1, 0, NULL, 0 <unfinished ...>  467 sendto(11, "\3", 1, 0, NULL, 0 <unfinished ...>  464 <... sendto resumed>) = 1  467 <... sendto resumed>) = 1  464 sendto(13, "\1NULL\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0"..., 53, 0, NULL, 0 <unfinished ...>  467 sendto(11, "\1NULL\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0"..., 53, 0, NULL, 0 <unfinished ...>  464 <... sendto resumed>) = 53  467 <... sendto resumed>) = 53  464 sendto(13, "\4&\5READY\vSocket-Type\0\0\0\3REQ\10Iden"..., 40, 0, NULL, 0) = 40  467 sendto(11, "\4\31\5READY\vSocket-Type\0\0\0\3REP", 27, 0, NULL, 0) = 27  464 sendto(13, "\1\0\0\0042pid", 8, 0, NULL, 0) = 8  467 sendto(11, "\1\0\0\7OK: 465", 11, 0, NULL, 0) = 11  464 sendto(11, "\1\0\0\7OK: 465", 11, 0, NULL, 0) = 11  464 setsockopt(14, SOL\_TCP, TCP\_NODELAY, [1], 4) = 0  464 getsockname(14, {sa\_family=AF\_INET, sin\_port=htons(4042), sin\_addr=inet\_addr("127.0.0.1")}, [128->16]) = 0  464 sendto(14, "\377\0\0\0\0\0\0\0\1\177\3", 11, 0, NULL, 0) = 11  464 sendto(14, "\1NULL\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0"..., 53, 0, NULL, 0) = 53  464 sendto(14, "\4&\5READY\vSocket-Type\0\0\0\3REQ\10Iden"..., 40, 0, NULL, 0) = 40  461 sendto(12, "\1\0\0\0102 remove", 12, 0, NULL, 0) = 12  464 sendto(13, "\1\0\0\0102 remove", 12, 0, NULL, 0) = 12  467 sendto(11, "\1\0\0\2OK", 6, 0, NULL, 0) = 6  464 sendto(11, "\1\0\0\2OK", 6, 0, NULL, 0) = 6  466 +++ exited with 0 +++  467 +++ exited with 0 +++  465 +++ exited with 0 +++  462 --- SIGCHLD {si\_signo=SIGCHLD, si\_code=CLD\_EXITED, si\_pid=465, si\_uid=1000, si\_status=0, si\_utime=0, si\_stime=0} ---  461 sendto(12, "\1\0\0\v1exec 1 val", 15, 0, NULL, 0) = 15  464 sendto(11, "\1\0\0\25OK:1: 'val' not found", 25, 0, NULL, 0) = 25  461 sendto(12, "\1\0\0\r1exec 2 val 1", 17, 0, NULL, 0) = 17  464 sendto(11, "\1\0\0\4OK:1", 8, 0, NULL, 0) = 8  461 sendto(12, "\1\0\0\v1exec 1 val", 15, 0, NULL, 0) = 15  464 sendto(11, "\1\0\0\7OK:1: 1", 11, 0, NULL, 0) = 11  461 sendto(12, "\1\0\0\0101 remove", 12, 0, NULL, 0) = 12  464 sendto(11, "\1\0\0\2OK", 6, 0, NULL, 0) = 6  460 +++ exited with 0 +++  463 +++ exited with 0 +++  464 +++ exited with 0 +++  462 +++ exited with 0 +++ |

На данном трейсе можно отследить отправку, получение сообщений, а также работу с сокетами.

**Выводы**

Проделав данные лабораторные работы я научилась работать с различными системными вызовами, корректно обрабатывать результат их выполнения, реализовывать различные алгоритмы и системы на основе системных вызовов. Сделала вывод, что работать с системными вызовами нужно аккуратно и осторожно: один раз, тестируя один системный вызов и пытаясь реализовать алгоритм с его использованием, я некорректно реализовала этот алгоритм, в следствие чего работа процессора мгновенно возросла до 100 процентов, а ноутбук завис.