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**Лабораторная работа №1 по курсу**  
**«Операционные системы»**

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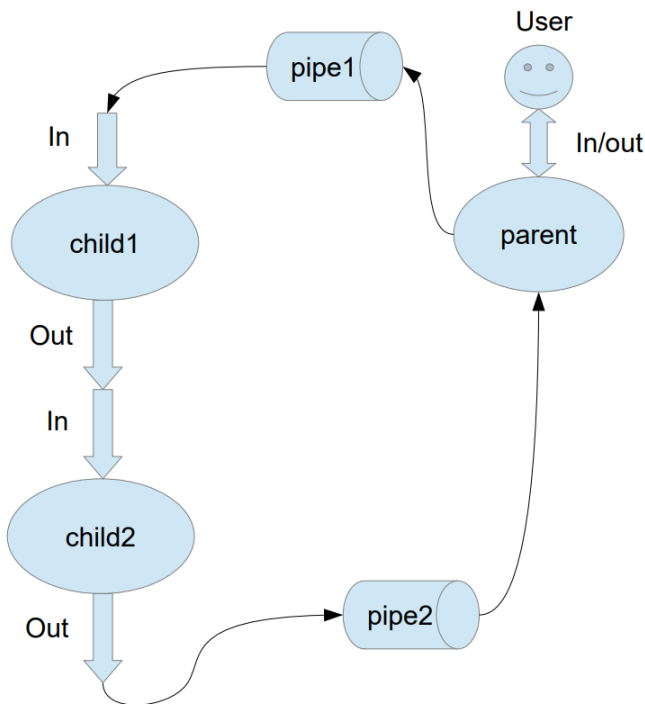
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# Постановка задачи

## Вариант 11.



Родительский процесс создает два дочерних процесса. Перенаправление стандартных потоков ввода-вывода показано на картинке выше. Child1 и Child2 можно «соединить» между собой дополнительным каналом. Родительский и дочерний процесс должны быть представлены разными программами. Родительский процесс принимает от пользователя строки произвольной длины и пересылает их в pipe1. Процесс child1 и child2 производят работу над строками. Child2 пересылает результат своей работы родительскому процессу. Родительский процесс полученный результат выводит в стандартный поток вывода.

Child1 переводит строки в верхний регистр. Child2 превращает все пробельные символы в символ «\_».

## Общий метод и алгоритм решения

Использованные системные вызовы:

- `pid_t fork(void);` – создаёт дочерний процесс.
- `int pipe(int *fd);` – создаёт канал (пайп).
- `int dup2(int oldfd, int newfd);` – делает `newfd` копией дескриптора `oldfd`, закрывая `newfd`, если требуется.
- `int execl(const char *path, const char *arg, ...);` – заменяет текущий образ процесса новым образом процесса.
- `int close(int fd);` – закрывает файловый дескриптор.
- `ssize_t write(int fd, const void *buf, size_t count);` – записывает до `count` байтов из буфера `buf` в файл, на который ссылается файловый дескриптор `fd`.
- `ssize_t read(int fd, void *buf, size_t count);` – пытается записать `count` байтов файлового дескриптора `fd` в буфер, адрес которого начинается с `buf`.

Создал три пайпа для связи дочерних процессов и родительского с дочерними с помощью pipe(). Далее создал два дочерних процесса с помощью fork() и вызвал скомпилированные child1.cpp и child2.cpp с помощью execl(). В родительском процессе читал символы, которые пишет пользователь и посылал в child1. Первый дочерний процесс с помощью toupper() «озаглавливал» символы и посылал их child2. Второй дочерний процесс заменял пробел на «\_» и посылал обратно родительскому процессу, который в свою очередь выводил их на стандартный вывод.

## Код программы

### main.cpp

```
#include <unistd.h>
#include <iostream>
#include <string>
#include <cctype>

int create_process() {
    pid_t pid = fork();
    if (pid == -1) {
        perror("Fork error!\n");
        exit(-1);
    }
    return pid;
}

void create_pipe(int* pipe_fd) {
    if (pipe(pipe_fd) == -1) {
        perror("Pipe error!\n");
        exit(-1);
    }
}

void dup_fd(int oldfd, int newfd) {
    if (dup2(oldfd, newfd) == -1) {
        perror("dup2 error!\n");
        exit(-1);
    }
}

int main() {
    int pipe1_fd[2], pipe2_fd[2];    // pipe1 - from parent to child1, pipe2 - from
    child2 to parent
    create_pipe(pipe1_fd);
    create_pipe(pipe2_fd);

    pid_t child1 = create_process();
    if (child1 == 0) {
        close(pipe1_fd[1]);
        close(pipe2_fd[0]);

        int pipech_fd[2];
        create_pipe(pipech_fd);

        pid_t child2 = create_process();

        if (child2 == 0) { // child2
            close(pipech_fd[0]);
            close(pipe2_fd[1]);

            dup_fd(pipe1_fd[0], STDIN_FILENO);
            dup_fd(pipech_fd[1], STDOUT_FILENO);
```

```

        execl("../build/child2", "../build/child2", NULL);

        close(pipech_fd[1]);
        close(pipe1_fd[0]);
    } else {        // child1
        close(pipe1_fd[0]);
        close(pipech_fd[1]);

        dup_fd(pipech_fd[0], STDIN_FILENO);
        dup_fd(pipe2_fd[1], STDOUT_FILENO);

        execl("../build/child1", "../build/child1", NULL);

        close(pipe1_fd[0]);
        close(pipe2_fd[1]);
    }
} else {        // parent
    close(pipe1_fd[0]);
    close(pipe2_fd[1]);
    char c = getchar();
    while (c != EOF) {
        write(pipe1_fd[1], &c, sizeof(c));
        read(pipe2_fd[0], &c, sizeof(c));

        putchar(c);

        c = getchar();
    }

    close(pipe1_fd[1]);
    close(pipe2_fd[0]);
}

return 0;
}

```

### **child1.cpp**

```

#include <iostream>
#include <unistd.h>

int main() {
    char c;
    while (read(STDIN_FILENO, &c, sizeof(c)) != -1) {
        c = toupper(c);
        write(STDOUT_FILENO, &c, sizeof(c));
    }
    close(STDIN_FILENO);
    close(STDOUT_FILENO);

    return 0;
}

```

### **child2.cpp**

```

#include <iostream>
#include <unistd.h>

int main() {
    char c;
    while (read(STDIN_FILENO, &c, sizeof(c)) != -1) {
        if (c == ' ') {
            c = '_';

```

```

    }
    write(STDOUT_FILENO, &c, sizeof(c));
}
close(STDIN_FILENO);
close(STDOUT_FILENO);

return 0;
}

```

# Протокол работы программы

## Тестирование:

```
cat_mood@nuclear-box:~/programming/mai-os-labs/lab01/build$ ./main
```

```
> hello world!
```

HELLO\_WORLD!

> HaaH hAAh

HAAH\_HAAH\_\_\_\_\_

**>**

— — — —

```
> 123 $$$ {}":
```

123\_#\$\$\_{\{\}}":

**Strace:**

```
execve("./main", ["./main"], 0x7fff12da45e8 /* 36 vars */) = 0
```

```
brk(NULL) = 0x55bb55177000
```

```
arch_prctl(0x3001 /* ARCH_??? */, 0x7ffcb0913060) = -1 EINVAL (Invalid argument)
```

```
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7f3c39234000
```

```
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=18023, ...}, AT_EMPTY_PATH) = 0
```

```
mmap(NULL, 18023, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7f3c3922f000
```

```
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\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) = 0x7f3c39003000
```

```
mprotect(0x7f3c3909d000, 1576960, PROT_NONE) = 0
```

```
mmap(0x7f3c3909d000, 1118208, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x9a000) = 0x7f3c3909d000
```

```
mmap(0x7f3c391ae000, 454656, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1ab000) = 0x7f3c391ae000
```

```
mmap(0x7f3c3921e000, 57344, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x21a000) = 0x7f3c3921e000
```

```

mmap(0x7f3c3922c000, 10432, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) =
0x7f3c3922c000

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\0\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"..., 48, 848) = 48

pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0GNU\0i8\235HZ\227\223\333\350s\360\352,\223\340."..., 68,
896) = 68

newfstatat(3, "", {st_mode=S_IFREG|0644, 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) = 0x7f3c38ddb000

mmap(0x7f3c38e03000, 1658880, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x28000) = 0x7f3c38e03000

mmap(0x7f3c38f98000, 360448, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1bd000) =
0x7f3c38f98000

mmap(0x7f3c38ff0000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x214000) = 0x7f3c38ff0000

mmap(0x7f3c38ff6000, 52816, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) =
0x7f3c38ff6000

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"..., 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) = 0x7f3c38cf4000

mmap(0x7f3c38d02000, 507904, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0xe000) = 0x7f3c38d02000

mmap(0x7f3c38d7e000, 372736, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x8a000) =
0x7f3c38d7e000

mmap(0x7f3c38dd9000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0xe4000) = 0x7f3c38dd9000

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\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) = 0x7f3c38cd4000

mmap(0x7f3c38cd7000, 94208, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x3000)
= 0x7f3c38cd7000

mmap(0x7f3c38cee000, 16384, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1a000) =
0x7f3c38cee000

mmap(0x7f3c38cf2000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x1d000) = 0x7f3c38cf2000

close(3) = 0

```

```

mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7f3c38cd2000
arch_prctl(ARCH_SET_FS, 0x7f3c38cd33c0) = 0
set_tid_address(0x7f3c38cd3690) = 8798
set_robust_list(0x7f3c38cd36a0, 24) = 0
rseq(0x7f3c38cd3d60, 0x20, 0, 0x53053053) = 0
mprotect(0x7f3c38ff0000, 16384, PROT_READ) = 0
mprotect(0x7f3c38cf2000, 4096, PROT_READ) = 0
mprotect(0x7f3c38dd9000, 4096, PROT_READ) = 0
mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7f3c38cd0000
mprotect(0x7f3c3921e000, 45056, PROT_READ) = 0
mprotect(0x55bb538e1000, 4096, PROT_READ) = 0
mprotect(0x7f3c3926e000, 8192, PROT_READ) = 0
prlimit64(0, RLIMIT_STACK, NULL, {rlim_cur=8192*1024, rlim_max=RLIM64_INFINITY}) = 0
munmap(0x7f3c3922f000, 18023) = 0
getrandom("\xb2\x0a\x2c\xd3\xe9\x5c\x55\xd", 8, GRND_NONBLOCK) = 8
brk(NULL) = 0x55bb55177000
brk(0x55bb55198000) = 0x55bb55198000
futex(0x7f3c3922c77c, FUTEX_WAKE_PRIVATE, 2147483647) = 0
pipe2([3, 4], 0) = 0
pipe2([5, 6], 0) = 0
clone(child_stack=NULL, flags=CLONE_CHILD_CLEARTID|CLONE_CHILD_SETTID|SIGCHLD, trace: Process
8799 attached
, child_tidptr=0x7f3c38cd3690) = 8799
[pid 8799] set_robust_list(0x7f3c38cd36a0, 24 <unfinished ...>
[pid 8798] close(3 <unfinished ...>
[pid 8799] <... set_robust_list resumed>) = 0
[pid 8798] <... close resumed> = 0
[pid 8799] close(4 <unfinished ...>
[pid 8798] close(6 <unfinished ...>
[pid 8799] <... close resumed> = 0
[pid 8798] <... close resumed> = 0
[pid 8798] newfstatat(0, "", <unfinished ...>
[pid 8799] close(5 <unfinished ...>
[pid 8798] <... newfstatat resumed>{st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0x5), ...},
AT_EMPTY_PATH) = 0
[pid 8799] <... close resumed> = 0
[pid 8798] read(0, <unfinished ...>
[pid 8799] pipe2([4, 5], 0) = 0

```

[pid 8799] clone(child\_stack=NULL, flags=CLONE\_CHILD\_CLEARTID|CLONE\_CHILD\_SETTID|SIGCHLDstrace:  
Process 8800 attached

<unfinished ...>

[pid 8800] set\_robust\_list(0x7f3c38cd36a0, 24) = 0

[pid 8799] <... clone resumed>, child\_tidptr=0x7f3c38cd3690) = 8800

[pid 8800] close(4 <unfinished ...>

[pid 8799] close(3 <unfinished ...>

[pid 8800] <... close resumed> = 0

[pid 8799] <... close resumed> = 0

[pid 8800] close(6 <unfinished ...>

[pid 8799] close(5 <unfinished ...>

[pid 8800] <... close resumed> = 0

[pid 8799] <... close resumed> = 0

[pid 8800] dup2(3, 0) = 0

[pid 8799] dup2(4, 0 <unfinished ...>

[pid 8800] dup2(5, 1 <unfinished ...>

[pid 8799] <... dup2 resumed> = 0

[pid 8800] <... dup2 resumed> = 1

[pid 8800] execve("../build/child2", ["../build/child2"], 0x7ffcb0913238 /\* 36 vars \*/  
<unfinished ...>

[pid 8799] dup2(6, 1) = 1

[pid 8799] execve("../build/child1", ["../build/child1"], 0x7ffcb0913238 /\* 36 vars \*/  
<unfinished ...>

[pid 8800] <... execve resumed> = 0

[pid 8800] brk(NULL) = 0x55bb9b29d000

[pid 8799] <... execve resumed> = 0

[pid 8800] arch\_prctl(0x3001 /\* ARCH\_??? \*/ , 0x7ffce5d0b060 <unfinished ...>

[pid 8799] brk(NULL <unfinished ...>

[pid 8800] <... arch\_prctl resumed> = -1 EINVAL (Invalid argument)

[pid 8799] <... brk resumed> = 0x55eb27ff6000

[pid 8800] mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0 <unfinished  
...>

[pid 8799] arch\_prctl(0x3001 /\* ARCH\_??? \*/ , 0x7ffe7fa7c7f0 <unfinished ...>

[pid 8800] <... mmap resumed> = 0x7fedc241e000

[pid 8799] <... arch\_prctl resumed> = -1 EINVAL (Invalid argument)

[pid 8799] mmap(NULL, 8192, PROT\_READ|PROT\_WRITE, MAP\_PRIVATE|MAP\_ANONYMOUS, -1, 0 <unfinished  
...>

[pid 8800] access("/etc/ld.so.preload", R\_OK <unfinished ...>

[pid 8799] <... mmap resumed> = 0x7fc547467000

[pid 8800] <... access resumed> = -1 ENOENT (No such file or directory)



```

[pid 8799] access("/etc/ld.so.preload", R_OK <unfinished ...>
[pid 8800] openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC <unfinished ...>
[pid 8799] <... access resumed>          = -1 ENOENT (No such file or directory)
[pid 8800] <... openat resumed>          = 4
[pid 8799] openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC <unfinished ...>
[pid 8800] newfstatat(4, "", <unfinished ...>
[pid 8799] <... openat resumed>          = 3
[pid 8800] <... newfstatat resumed>{st_mode=S_IFREG|0644, st_size=18023, ...}, AT_EMPTY_PATH) =
0
[pid 8799] newfstatat(3, "", <unfinished ...>
[pid 8800] mmap(NULL, 18023, PROT_READ, MAP_PRIVATE, 4, 0 <unfinished ...>
[pid 8799] <... newfstatat resumed>{st_mode=S_IFREG|0644, st_size=18023, ...}, AT_EMPTY_PATH) =
0
[pid 8800] <... mmap resumed>            = 0x7fedc2419000
[pid 8799] mmap(NULL, 18023, PROT_READ, MAP_PRIVATE, 3, 0 <unfinished ...>
[pid 8800] close(4 <unfinished ...>
[pid 8799] <... mmap resumed>            = 0x7fc547462000
[pid 8800] <... close resumed>           = 0
[pid 8799] close(3 <unfinished ...>
[pid 8800] openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libstdc++.so.6", O_RDONLY|O_CLOEXEC
<unfinished ...>
[pid 8799] <... close resumed>           = 0
[pid 8800] <... openat resumed>          = 4
[pid 8799] openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libstdc++.so.6", O_RDONLY|O_CLOEXEC
<unfinished ...>
[pid 8800] read(4, <unfinished ...>
[pid 8799] <... openat resumed>          = 3
[pid 8800] <... read
resumed>"\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\0"..., 832) = 832
[pid 8799] read(3, <unfinished ...>
[pid 8800] newfstatat(4, "", <unfinished ...>
[pid 8799] <... read
resumed>"\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\0"..., 832) = 832
[pid 8800] <... newfstatat resumed>{st_mode=S_IFREG|0644, st_size=2260296, ...}, AT_EMPTY_PATH)
= 0
[pid 8799] newfstatat(3, "", <unfinished ...>
[pid 8800] mmap(NULL, 2275520, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 4, 0 <unfinished ...>
[pid 8799] <... newfstatat resumed>{st_mode=S_IFREG|0644, st_size=2260296, ...}, AT_EMPTY_PATH)
= 0
[pid 8800] <... mmap resumed>            = 0x7fedc21ed000
[pid 8799] mmap(NULL, 2275520, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0 <unfinished ...>

```

```

[pid 8800] mprotect(0x7fedc2287000, 1576960, PROT_NONE <unfinished ...>

[pid 8799] <... mmap resumed>) = 0x7fc547236000

[pid 8800] <... mprotect resumed>) = 0

[pid 8799] mprotect(0x7fc5472d0000, 1576960, PROT_NONE <unfinished ...>

[pid 8800] mmap(0x7fedc2287000, 1118208, PROT_READ|PROT_EXEC,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x9a000 <unfinished ...>

[pid 8799] <... mprotect resumed>) = 0

[pid 8800] <... mmap resumed>) = 0x7fedc2287000

[pid 8799] mmap(0x7fc5472d0000, 1118208, PROT_READ|PROT_EXEC,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x9a000 <unfinished ...>

[pid 8800] mmap(0x7fedc2398000, 454656, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4,
0x1ab000 <unfinished ...>

[pid 8799] <... mmap resumed>) = 0x7fc5472d0000

[pid 8800] <... mmap resumed>) = 0x7fedc2398000

[pid 8799] mmap(0x7fc5473e1000, 454656, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x1ab000 <unfinished ...>

[pid 8800] mmap(0x7fedc2408000, 57344, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x21a000 <unfinished ...>

[pid 8799] <... mmap resumed>) = 0x7fc5473e1000

[pid 8800] <... mmap resumed>) = 0x7fedc2408000

[pid 8799] mmap(0x7fc547451000, 57344, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x21a000 <unfinished ...>

[pid 8800] mmap(0x7fedc2416000, 10432, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0 <unfinished ...>

[pid 8799] <... mmap resumed>) = 0x7fc547451000

[pid 8800] <... mmap resumed>) = 0x7fedc2416000

[pid 8799] mmap(0x7fc54745f000, 10432, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0 <unfinished ...>

[pid 8800] close(4 <unfinished ...>

[pid 8799] <... mmap resumed>) = 0x7fc54745f000

[pid 8800] <... close resumed>) = 0

[pid 8799] close(3 <unfinished ...>

[pid 8800] openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libc.so.6", O_RDONLY|O_CLOEXEC <unfinished
...>

[pid 8799] <... close resumed>) = 0

[pid 8800] <... openat resumed>) = 4

[pid 8799] openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libc.so.6", O_RDONLY|O_CLOEXEC <unfinished
...>

[pid 8800] read(4, <unfinished ...>

[pid 8799] <... openat resumed>) = 3

[pid 8800] <... read
resumed>"\177ELF\2\1\1\3\0\0\0\0\0\0\3\0\>\0\1\0\0\0P\237\2\0\0\0\0"... , 832) = 832

[pid 8799] read(3, <unfinished ...>

```

```

[pid 8800] pread64(4, <unfinished ...>

[pid 8799] <... read
resumed>"\177ELF\2\1\1\3\0\0\0\0\0\0\3\0>\0\1\0\0\0P\237\2\0\0\0\0"... , 832) = 832

[pid 8800] <... pread64
resumed>"\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"... , 784, 64) = 784

[pid 8799] pread64(3, <unfinished ...>

[pid 8800] 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"... , 48,
848) = 48

[pid 8799] <... pread64
resumed>"\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"... , 784, 64) = 784

[pid 8800] pread64(4, <unfinished ...>

[pid 8799] pread64(3, <unfinished ...>

[pid 8800] <... pread64
resumed>"\4\0\0\0\24\0\0\0\3\0\0\0GNU\0i8\235HZ\227\223\333\350s\360\352,\223\340."... , 68, 896) = 68

[pid 8799] <... pread64 resumed>"\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"... , 48, 848) = 48

[pid 8800] newfstatat(4, "", <unfinished ...>

[pid 8799] pread64(3, <unfinished ...>

[pid 8800] <... newfstatat resumed>{st_mode=S_IFREG|0644, st_size=2216304, ...}, AT_EMPTY_PATH)
= 0

[pid 8799] <... pread64
resumed>"\4\0\0\0\24\0\0\0\3\0\0\0GNU\0i8\235HZ\227\223\333\350s\360\352,\223\340."... , 68, 896) = 68

[pid 8800] pread64(4, <unfinished ...>

[pid 8799] newfstatat(3, "", <unfinished ...>

[pid 8800] <... pread64
resumed>"\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"... , 784, 64) = 784

[pid 8799] <... newfstatat resumed>{st_mode=S_IFREG|0644, st_size=2216304, ...}, AT_EMPTY_PATH)
= 0

[pid 8800] mmap(NULL, 2260560, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 4, 0 <unfinished ...>

[pid 8799] pread64(3, <unfinished ...>

[pid 8800] <... mmap resumed>          = 0x7fedc1fc5000

[pid 8799] <... pread64
resumed>"\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"... , 784, 64) = 784

[pid 8800] mmap(0x7fedc1fed000, 1658880, PROT_READ|PROT_EXEC,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x28000 <unfinished ...>

[pid 8799] mmap(NULL, 2260560, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0 <unfinished ...>

[pid 8800] <... mmap resumed>          = 0x7fedc1fed000

[pid 8799] <... mmap resumed>          = 0x7fc54700e000

[pid 8800] mmap(0x7fedc2182000, 360448, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4,
0x1bd000 <unfinished ...>

[pid 8799] mmap(0x7fc547036000, 1658880, PROT_READ|PROT_EXEC,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x28000 <unfinished ...>

[pid 8800] <... mmap resumed>          = 0x7fedc2182000

[pid 8799] <... mmap resumed>          = 0x7fc547036000

```

```

    [pid 8800] mmap(0x7fedc21da000, 24576, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x214000 <unfinished ...>

    [pid 8799] mmap(0x7fc5471cb000, 360448, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x1bd000 <unfinished ...>

    [pid 8800] <... mmap resumed>                = 0x7fedc21da000

    [pid 8799] <... mmap resumed>                = 0x7fc5471cb000

    [pid 8800] mmap(0x7fedc21e0000, 52816, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0 <unfinished ...>

    [pid 8799] mmap(0x7fc547223000, 24576, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x214000 <unfinished ...>

    [pid 8800] <... mmap resumed>                = 0x7fedc21e0000

    [pid 8799] <... mmap resumed>                = 0x7fc547223000

    [pid 8800] close(4 <unfinished ...>

    [pid 8799] mmap(0x7fc547229000, 52816, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0 <unfinished ...>

    [pid 8800] <... close resumed>                = 0

    [pid 8799] <... mmap resumed>                = 0x7fc547229000

    [pid 8800] openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libm.so.6", O_RDONLY|O_CLOEXEC <unfinished
...>

    [pid 8799] close(3 <unfinished ...>

    [pid 8800] <... openat resumed>                = 4

    [pid 8799] <... close resumed>                = 0

    [pid 8800] read(4, <unfinished ...>

    [pid 8799] openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libm.so.6", O_RDONLY|O_CLOEXEC <unfinished
...>

    [pid 8800] <... read
resumed>"\177ELF\2\1\1\3\0\0\0\0\0\0\0\3\0>\0\1\0\0\0\0\0\0\0\0\0\0"..., 832) = 832

    [pid 8799] <... openat resumed>                = 3

    [pid 8800] newfstatat(4, "", <unfinished ...>

    [pid 8799] read(3, <unfinished ...>

    [pid 8800] <... newfstatat resumed>{st_mode=S_IFREG|0644, st_size=940560, ...}, AT_EMPTY_PATH)
= 0

    [pid 8799] <... read
resumed>"\177ELF\2\1\1\3\0\0\0\0\0\0\0\3\0>\0\1\0\0\0\0\0\0\0\0\0\0"..., 832) = 832

    [pid 8800] mmap(NULL, 942344, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 4, 0 <unfinished ...>

    [pid 8799] newfstatat(3, "", <unfinished ...>

    [pid 8800] <... mmap resumed>                = 0x7fedc1ede000

    [pid 8799] <... newfstatat resumed>{st_mode=S_IFREG|0644, st_size=940560, ...}, AT_EMPTY_PATH)
= 0

    [pid 8800] mmap(0x7fedc1eec000, 507904, PROT_READ|PROT_EXEC,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0xe000 <unfinished ...>

    [pid 8799] mmap(NULL, 942344, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0 <unfinished ...>

    [pid 8800] <... mmap resumed>                = 0x7fedc1eec000

```

```

[pid 8799] <... mmap resumed>)          = 0x7fc546f27000

[pid 8800] mmap(0x7fedc1f68000, 372736, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4,
0x8a000 <unfinished ...>

[pid 8799] mmap(0x7fc546f35000, 507904, PROT_READ|PROT_EXEC,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0xe000 <unfinished ...>

[pid 8800] <... mmap resumed>)          = 0x7fedc1f68000

[pid 8799] <... mmap resumed>)          = 0x7fc546f35000

[pid 8800] mmap(0x7fedc1fc3000, 8192, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0xe4000 <unfinished ...>

[pid 8799] mmap(0x7fc546fb1000, 372736, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x8a000 <unfinished ...>

[pid 8800] <... mmap resumed>)          = 0x7fedc1fc3000

[pid 8799] <... mmap resumed>)          = 0x7fc546fb1000

[pid 8800] close(4 <unfinished ...>

[pid 8799] mmap(0x7fc54700c000, 8192, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0xe4000 <unfinished ...>

[pid 8800] <... close resumed>)          = 0

[pid 8799] <... mmap resumed>)          = 0x7fc54700c000

[pid 8800] openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libgcc_s.so.1", O_RDONLY|O_CLOEXEC
<unfinished ...>

[pid 8799] close(3 <unfinished ...>

[pid 8800] <... openat resumed>)          = 4

[pid 8799] <... close resumed>)          = 0

[pid 8800] read(4, <unfinished ...>

[pid 8799] openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libgcc_s.so.1", O_RDONLY|O_CLOEXEC
<unfinished ...>

[pid 8800] <... read
resumed>"\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

[pid 8799] <... openat resumed>)          = 3

[pid 8800] newfstatat(4, "", <unfinished ...>

[pid 8799] read(3, <unfinished ...>

[pid 8800] <... newfstatat resumed>{st_mode=S_IFREG|0644, st_size=125488, ...}, AT_EMPTY_PATH)
= 0

[pid 8799] <... read
resumed>"\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

[pid 8800] mmap(NULL, 127720, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 4, 0 <unfinished ...>

[pid 8799] newfstatat(3, "", <unfinished ...>

[pid 8800] <... mmap resumed>)          = 0x7fedc1ebe000

[pid 8799] <... newfstatat resumed>{st_mode=S_IFREG|0644, st_size=125488, ...}, AT_EMPTY_PATH)
= 0

[pid 8800] mmap(0x7fedc1ec1000, 94208, PROT_READ|PROT_EXEC,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x3000 <unfinished ...>

[pid 8799] mmap(NULL, 127720, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0 <unfinished ...>

```

```

[pid 8800] <... mmap resumed>)          = 0x7fedc1ec1000
[pid 8799] <... mmap resumed>)          = 0x7fc546f07000
[pid 8800] mmap(0x7fedc1ed8000, 16384, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4,
0x1a000 <unfinished ...>
[pid 8799] mmap(0x7fc546f0a000, 94208, PROT_READ|PROT_EXEC,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x3000 <unfinished ...>
[pid 8800] <... mmap resumed>)          = 0x7fedc1ed8000
[pid 8799] <... mmap resumed>)          = 0x7fc546f0a000
[pid 8800] mmap(0x7fedc1edc000, 8192, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 4, 0x1d000 <unfinished ...>
[pid 8799] mmap(0x7fc546f21000, 16384, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3,
0x1a000 <unfinished ...>
[pid 8800] <... mmap resumed>)          = 0x7fedc1edc000
[pid 8799] <... mmap resumed>)          = 0x7fc546f21000
[pid 8800] close(4 <unfinished ...>
[pid 8799] mmap(0x7fc546f25000, 8192, PROT_READ|PROT_WRITE,
MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1d000 <unfinished ...>
[pid 8800] <... close resumed>)         = 0
[pid 8799] <... mmap resumed>)          = 0x7fc546f25000
[pid 8800] mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0 <unfinished
...>
[pid 8799] close(3 <unfinished ...>
[pid 8800] <... mmap resumed>)          = 0x7fedc1ebc000
[pid 8799] <... close resumed>)         = 0
[pid 8800] arch_prctl(ARCH_SET_FS, 0x7fedc1ebd3c0 <unfinished ...>
[pid 8799] mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0 <unfinished
...>
[pid 8800] <... arch_prctl resumed>)     = 0
[pid 8799] <... mmap resumed>)          = 0x7fc546f05000
[pid 8800] set_tid_address(0x7fedc1ebd690 <unfinished ...>
[pid 8799] arch_prctl(ARCH_SET_FS, 0x7fc546f063c0 <unfinished ...>
[pid 8800] <... set_tid_address resumed>) = 8800
[pid 8799] <... arch_prctl resumed>)     = 0
[pid 8800] set_robust_list(0x7fedc1ebd6a0, 24 <unfinished ...>
[pid 8799] set_tid_address(0x7fc546f06690 <unfinished ...>
[pid 8800] <... set_robust_list resumed>) = 0
[pid 8799] <... set_tid_address resumed>) = 8799
[pid 8800] rseq(0x7fedc1ebdd60, 0x20, 0, 0x53053053 <unfinished ...>
[pid 8799] set_robust_list(0x7fc546f066a0, 24 <unfinished ...>
[pid 8800] <... rseq resumed>)          = 0
[pid 8799] <... set_robust_list resumed>) = 0

```

```

[pid 8800] mprotect(0x7fedc21da000, 16384, PROT_READ <unfinished ...>
[pid 8799] rseq(0x7fc546f06d60, 0x20, 0, 0x53053053 <unfinished ...>
[pid 8800] <... mprotect resumed>)      = 0
[pid 8799] <... rseq resumed>)          = 0
[pid 8800] mprotect(0x7fedc1edc000, 4096, PROT_READ <unfinished ...>
[pid 8799] mprotect(0x7fc547223000, 16384, PROT_READ <unfinished ...>
[pid 8800] <... mprotect resumed>)      = 0
[pid 8799] <... mprotect resumed>)      = 0
[pid 8800] mprotect(0x7fedc1fc3000, 4096, PROT_READ <unfinished ...>
[pid 8799] mprotect(0x7fc546f25000, 4096, PROT_READ <unfinished ...>
[pid 8800] <... mprotect resumed>)      = 0
[pid 8799] <... mprotect resumed>)      = 0
[pid 8799] mprotect(0x7fc54700c000, 4096, PROT_READ <unfinished ...>
[pid 8800] mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0 <unfinished
...>
[pid 8799] <... mprotect resumed>)      = 0
[pid 8800] <... mmap resumed>)          = 0x7fedc1eba000
[pid 8799] mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) =
0x7fc546f03000
[pid 8800] mprotect(0x7fedc2408000, 45056, PROT_READ) = 0
[pid 8799] mprotect(0x7fc547451000, 45056, PROT_READ <unfinished ...>
[pid 8800] mprotect(0x55bb993f8000, 4096, PROT_READ <unfinished ...>
[pid 8799] <... mprotect resumed>)      = 0
[pid 8800] <... mprotect resumed>)      = 0
[pid 8799] mprotect(0x55eb2640c000, 4096, PROT_READ <unfinished ...>
[pid 8800] mprotect(0x7fedc2458000, 8192, PROT_READ <unfinished ...>
[pid 8799] <... mprotect resumed>)      = 0
[pid 8800] <... mprotect resumed>)      = 0
[pid 8799] mprotect(0x7fc5474a1000, 8192, PROT_READ <unfinished ...>
[pid 8800] prlimit64(0, RLIMIT_STACK, NULL, <unfinished ...>
[pid 8799] <... mprotect resumed>)      = 0
[pid 8800] <... prlimit64 resumed>{rlim_cur=8192*1024, rlim_max=RLIM64_INFINITY}) = 0
[pid 8799] prlimit64(0, RLIMIT_STACK, NULL, <unfinished ...>
[pid 8800] munmap(0x7fedc2419000, 18023 <unfinished ...>
[pid 8799] <... prlimit64 resumed>{rlim_cur=8192*1024, rlim_max=RLIM64_INFINITY}) = 0
[pid 8800] <... munmap resumed>)        = 0
[pid 8799] munmap(0x7fc547462000, 18023 <unfinished ...>
[pid 8800] getrandom( <unfinished ...>

```

```

[pid 8799] <... munmap resumed>)          = 0
[pid 8800] <... getrandom resumed>"\x37\x87\x0c\xa7\x1e\xb0\x4b\x66", 8, GRND_NONBLOCK) = 8
[pid 8799] getrandom( <unfinished ...>
[pid 8800] brk(NULL <unfinished ...>
[pid 8799] <... getrandom resumed>"\x15\xfa\xec\x38\x5a\xf7\x2a\xd0", 8, GRND_NONBLOCK) = 8
[pid 8800] <... brk resumed>)              = 0x55bb9b29d000
[pid 8799] brk(NULL <unfinished ...>
[pid 8800] brk(0x55bb9b2be000 <unfinished ...>
[pid 8799] <... brk resumed>)              = 0x55eb27ff6000
[pid 8800] <... brk resumed>)              = 0x55bb9b2be000
[pid 8799] brk(0x55eb28017000 <unfinished ...>
[pid 8800] futex(0x7fedc241677c, FUTEX_WAKE_PRIVATE, 2147483647 <unfinished ...>
[pid 8799] <... brk resumed>)              = 0x55eb28017000
[pid 8800] <... futex resumed>)            = 0
[pid 8799] futex(0x7fc54745f77c, FUTEX_WAKE_PRIVATE, 2147483647 <unfinished ...>
[pid 8800] read(0, <unfinished ...>
[pid 8799] <... futex resumed>)            = 0
[pid 8799] read(0, hello
<unfinished ...>
[pid 8798] <... read resumed>"hello\n", 1024) = 6
[pid 8798] write(4, "h", 1)                = 1
[pid 8800] <... read resumed>"h", 1)        = 1
[pid 8798] read(5, <unfinished ...>
[pid 8800] write(1, "h", 1)                = 1
[pid 8799] <... read resumed>"h", 1)        = 1
[pid 8800] read(0, <unfinished ...>
[pid 8799] write(1, "H", 1)                = 1
[pid 8798] <... read resumed>"H", 1)        = 1
[pid 8799] read(0, <unfinished ...>
[pid 8798] newfstatat(1, "", {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0x5), ...},
AT_EMPTY_PATH) = 0
[pid 8798] write(4, "e", 1)                = 1
[pid 8800] <... read resumed>"e", 1)        = 1
[pid 8798] read(5, <unfinished ...>
[pid 8800] write(1, "e", 1)                = 1
[pid 8799] <... read resumed>"e", 1)        = 1
[pid 8800] read(0, <unfinished ...>
[pid 8799] write(1, "E", 1 <unfinished ...>

```



```
[pid 8798] <... read resumed>"E", 1) = 1
[pid 8799] <... write resumed>) = 1
[pid 8798] write(4, "l", 1 <unfinished ...>
[pid 8799] read(0, <unfinished ...>
[pid 8798] <... write resumed>) = 1
[pid 8800] <... read resumed>"l", 1) = 1
[pid 8798] read(5, <unfinished ...>
[pid 8800] write(1, "l", 1) = 1
[pid 8799] <... read resumed>"l", 1) = 1
[pid 8800] read(0, <unfinished ...>
[pid 8799] write(1, "L", 1 <unfinished ...>
[pid 8798] <... read resumed>"L", 1) = 1
[pid 8799] <... write resumed>) = 1
[pid 8798] write(4, "l", 1 <unfinished ...>
[pid 8799] read(0, <unfinished ...>
[pid 8798] <... write resumed>) = 1
[pid 8800] <... read resumed>"l", 1) = 1
[pid 8798] read(5, <unfinished ...>
[pid 8800] write(1, "l", 1) = 1
[pid 8799] <... read resumed>"l", 1) = 1
[pid 8800] read(0, <unfinished ...>
[pid 8799] write(1, "L", 1 <unfinished ...>
[pid 8798] <... read resumed>"L", 1) = 1
[pid 8799] <... write resumed>) = 1
[pid 8798] write(4, "o", 1 <unfinished ...>
[pid 8799] read(0, <unfinished ...>
[pid 8798] <... write resumed>) = 1
[pid 8800] <... read resumed>"o", 1) = 1
[pid 8798] read(5, <unfinished ...>
[pid 8800] write(1, "o", 1) = 1
[pid 8799] <... read resumed>"o", 1) = 1
[pid 8800] read(0, <unfinished ...>
[pid 8799] write(1, "O", 1 <unfinished ...>
[pid 8798] <... read resumed>"O", 1) = 1
[pid 8799] <... write resumed>) = 1
[pid 8798] write(4, "\n", 1 <unfinished ...>
[pid 8799] read(0, <unfinished ...>
```

```

[pid 8798] <... write resumed>          = 1
[pid 8800] <... read resumed>"\\n", 1) = 1
[pid 8798] read(5, <unfinished ...>
[pid 8800] write(1, "\\n", 1)           = 1
[pid 8799] <... read resumed>"\\n", 1) = 1
[pid 8800] read(0, <unfinished ...>
[pid 8799] write(1, "\\n", 1 <unfinished ...>
[pid 8798] <... read resumed>"\\n", 1) = 1
[pid 8799] <... write resumed>          = 1
[pid 8798] write(1, "HELLO\\n", 6 <unfinished ...>
HELLO
[pid 8799] read(0, <unfinished ...>
[pid 8798] <... write resumed>          = 6
[pid 8798] read(0, "", 1024)            = 0
[pid 8798] close(4)                     = 0
[pid 8800] <... read resumed>"", 1)     = 0
[pid 8798] close(5 <unfinished ...>
[pid 8800] write(1, "\\n", 1 <unfinished ...>
[pid 8798] <... close resumed>          = 0
[pid 8800] <... write resumed>          = 1
[pid 8800] read(0, <unfinished ...>
[pid 8799] <... read resumed>"\\n", 1) = 1
[pid 8798] exit_group(0 <unfinished ...>
[pid 8800] <... read resumed>"", 1)     = 0
[pid 8798] <... exit_group resumed>     = ?
[pid 8799] write(1, "\\n", 1 <unfinished ...>
[pid 8800] write(1, "\\n", 1 <unfinished ...>
[pid 8799] <... write resumed>          = -1 EPIPE (Broken pipe)
[pid 8798] +++ exited with 0 +++
[pid 8800] <... write resumed>          = 1
[pid 8799] --- SIGPIPE {si_signo=SIGPIPE, si_code=SI_USER, si_pid=8799, si_uid=1000} ---
[pid 8800] read(0, "", 1)               = 0
[pid 8800] write(1, "\\n", 1)           = 1
[pid 8799] +++ killed by SIGPIPE +++
read(0, "", 1)                          = 0
write(1, "\\n", 1)                      = -1 EPIPE (Broken pipe)
--- SIGPIPE {si_signo=SIGPIPE, si_code=SI_USER, si_pid=8800, si_uid=1000} ---

```

+++ killed by SIGPIPE +++

## **Вывод**

В ходе лабораторной работы я написал программу, которая делает системные вызовы. Я научился использовать пайпы и работать с процессами. В ходе работы я столкнулся с некоторыми проблемами: бесконечный цикл (решил заменой `cin/cout` на `read/write`) и `segmentation fault` (решил использованием `char` вместо `std::string`).