Московский Авиационный Институт

(Национальный Исследовательский Университет)

Институт №8 “Компьютерные науки и прикладная математика”

Кафедра №806 “Вычислительная математика и программирование”

**Лабораторная работа №3 по курсу**

**«Операционные системы»**

Группа: М80-206Б-22

Студент: Жаднов М. Д.

Преподаватель: Миронов Е.С.

Оценка: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Постановка задачи**

**Группа вариантов 2.**

Родительский процесс создает дочерний процесс. Первой строчкой пользователь в консоль родительского процесса вводит имя файла, которое будет использовано для открытия файла с таким именем на чтение. Стандартный поток ввода дочернего процесса переопределяется открытым файлом. Дочерний процесс читает команды из стандартного потока ввода. Родительский процесс выводит результат в свой стандартный поток вывода. Родительский и дочерний процесс должны быть представлены разными программами. Взаимодействие между процессами осуществляется через системные сигналы/события и/или через отображаемые файлы (memory-mapped files).

**Вариант 8.**

В файле записаны команды вида:«число число число<endline>». Дочерний процесс производит деление первого числа команда, на последующие числа в команде, а результат “кладет” в map-file. Если происходит деление на 0, то дочерний (и родительский) процесс завершают свою работу с ошибкой. Проверка деления на 0 должна осуществляться на стороне дочернего процесса. Числа имеют тип int. Количество чисел может быть произвольным.

**Общий метод и алгоритм решения**

Использованные системные вызовы:

* pid\_t fork(void); – создает дочерний процесс.
* int execv(const char \*\_\_path, char \*const \*\_\_argv); - предоставляет новой программе список аргументов в виде массива указателей на строки, заканчивающиеся (char \*)0.
* pid\_t wait(int \*status); – приостаналивает выполнение текущего процесса до тех пор, пока дочерний процесс не завершится.
* void\* mmap(void \*, size\_t, int, int, int, off\_t) - выделяет память или отображает файлы (или устройства) в памяти.
* int munmap(void\*, size\_t) - удаляет сопоставление с выделенной памятью.
* int ftruncate(int, off\_t) - приводит файл к заданному размеру.
* int shm\_open(const char \*, int, ...) -

Первой строчкой пользователь в консоль родительского процесса вводит имя файла, которое будет использовано для открытия файла с таким именем на чтение Далее происходит проверка поданного файла на чтение, и если прочитался успешно, то создается дочерний процесс. Потом в дочернем происходит копирование файлового дескриптора файла в стандартный поток ввода. Следующим шагом дочерний процесс запускает программу child.c, создает map-file и обрабатывает свой стандартный ввод (пишет результат в map-file). Потом родительский процесс читает map-file (до отметки конца результатов (т.е. -2)) и выводит полученные результаты в стандартный поток вывода, а если встречает -1 (что значит завершение программы дочернего процесса неудачей), то выводит сообщение об ошибке (“Division by zero”) и завершает работу.

**Код программы**

**parent.c**

#include <stdio.h>

#include <unistd.h>

#include <stdlib.h>

#include <sys/types.h>

#include <sys/wait.h>

#include <sys/mman.h>

#include <sys/stat.h>

#include <fcntl.h>

#include <string.h>

#include <stdbool.h>

#define MEMORY\_NAME "/1"

int main(){

char\* filename = malloc(sizeof(char));

struct stat statbuf;

if(!scanf("%s", filename)){

perror("\nScan file problem!\n");

\_exit(EXIT\_FAILURE);

}

int fd = 0;

fd = open(filename, O\_RDONLY);

if(fd == -1){

perror("\nCan't open file\n");

\_exit(EXIT\_FAILURE);

}

if ( fstat(fd, &statbuf) < 0 ){

perror("\nCan't get file size\n");

\_exit(EXIT\_FAILURE);

}

pid\_t pid = fork();

if (pid == -1) {

perror("\nfork: Here is a problem\n");

\_exit(EXIT\_FAILURE);

}

else if(pid == 0){ //child

dup2(fd, STDIN\_FILENO);

char\* args[] = {"./child", NULL};

if (execv(args[0], args) == -1){

fprintf(stderr, "Unable to exec\n");

\_exit(EXIT\_FAILURE);

}

}else{ //parent

wait(0);

int fd\_virt = shm\_open(

MEMORY\_NAME,

O\_RDONLY,

S\_IRUSR | S\_IWUSR);

if(fd\_virt == -1){

perror("\nshm\_open: here is a problem\n");

\_exit(EXIT\_FAILURE);

}

int\* virtual = (int\*)mmap(

NULL,

statbuf.st\_size,

PROT\_READ, MAP\_SHARED,

fd\_virt,

0);

if(virtual == MAP\_FAILED){

perror("\nmmap: here is a problem\n");

\_exit(EXIT\_FAILURE);

}

int result = 0;

for(int i = 0; i < statbuf.st\_size; i++){

if(virtual[i] == -1){

printf("Division by zero\n");

if(munmap(virtual, statbuf.st\_size) == -1){

perror("munmap: Here is a problem");

\_exit(EXIT\_FAILURE);

}

if(shm\_unlink(MEMORY\_NAME) == -1){

perror("munmap: Here is a problem");

\_exit(EXIT\_FAILURE);

}

close(fd\_virt);

\_exit(EXIT\_FAILURE);

}

if(virtual[i] == -2){

break;

}

printf("%d\n", virtual[i]);

}

if(munmap(virtual, statbuf.st\_size) == -1){

perror("munmap: Here is a problem");

\_exit(EXIT\_FAILURE);

}

if(shm\_unlink(MEMORY\_NAME) == -1){

perror("munmap: Here is a problem");

\_exit(EXIT\_FAILURE);

}

close(fd\_virt);

}

return 0;

}

**child.c**

#include <stdio.h>

#include <unistd.h>

#include <stdlib.h>

#include <sys/types.h>

#include <sys/wait.h>

#include <sys/mman.h>

#include <sys/stat.h>

#include <fcntl.h>

#include <string.h>

#include <stdbool.h>

#define MEMORY\_NAME "/1"

int main(){

int fd\_virt = shm\_open(

MEMORY\_NAME,

O\_CREAT | O\_RDWR,

S\_IRUSR | S\_IWUSR);

if(fd\_virt == -1){

perror("\n(child)shm\_open: here is a problem\n");

if(shm\_unlink(MEMORY\_NAME) == -1){

perror("(child)munmap: Here is a problem");

\_exit(EXIT\_FAILURE);

}

close(fd\_virt);

\_exit(EXIT\_FAILURE);

}

struct stat statbuf;

if (fstat(STDIN\_FILENO, &statbuf) < 0 ){

perror("\n(child)Can't get file size\n");

if(shm\_unlink(MEMORY\_NAME) == -1){

perror("(child)munmap: Here is a problem");

\_exit(EXIT\_FAILURE);

}

close(fd\_virt);

\_exit(EXIT\_FAILURE);

}

if (ftruncate(fd\_virt, statbuf.st\_size) == -1) {

perror("\n(child)ftruncate: here is a problem\n");

if(shm\_unlink(MEMORY\_NAME) == -1){

perror("(child)munmap: Here is a problem");

\_exit(EXIT\_FAILURE);

}

close(fd\_virt);

\_exit(EXIT\_FAILURE);

}

int\* virtual = (int\*)mmap(

NULL,

statbuf.st\_size,

PROT\_WRITE | PROT\_READ,

MAP\_SHARED,

fd\_virt,

0);

if(virtual == MAP\_FAILED){

perror("\n(child)mmap: here is a problem\n");

if(shm\_unlink(MEMORY\_NAME) == -1){

perror("(child)munmap: Here is a problem");

\_exit(EXIT\_FAILURE);

}

close(fd\_virt);

\_exit(EXIT\_FAILURE);

}

int c = '\0';

int tmp = 0, res = 0;

int end\_of\_str = 0;

char\* to\_res = "\0";

int count = 0;

do{

if(!end\_of\_str){

if(c>='0' && c<='9'){

tmp = tmp\*10 + c - '0';

}

if(c == ' ' || c == '\n' || c == EOF){

if(res == 0 && tmp != 0){

res = tmp;

}

else if(res != 0 && tmp != 0){

res /= tmp;

}

else if(res == 0 && tmp == 0){

end\_of\_str = 1;

}

else if(res != 0 && tmp == 0){

res = -1;

virtual[count] = res;

\_exit(EXIT\_FAILURE);

}

tmp = 0;

}

}

if(c == '\n' || c == EOF){

virtual[count] = res;

count++;

end\_of\_str = 0;

res = 0;

}

}while(read(STDIN\_FILENO, &c, sizeof(char)) > 0);

res = -2; // end of work

virtual[count] = res;

return 0;

}

**Протокол работы программы**

**Тестирование:**

mishazhadnov@McB-airmi scr % ./parent

test\_ok.txt

0

6

2

50

0

11

mishazhadnov@McB-airmi scr % ./parent

test\_err.txt

1

3

0

Division by zero

**Dtrace (аналог strace):**

mishazhadnov@McB-airmi scr % sudo dtruss -f ./parent

Password:

dtrace: system integrity protection is on, some features will not be available

PID/THRD SYSCALL(args) = return

15678/0x9045d: fork() = 0 0

15678/0x9045d: munmap(0x1084EE000, 0xA0000) = 0 0

15678/0x9045d: munmap(0x10858E000, 0x8000) = 0 0

15678/0x9045d: munmap(0x108596000, 0x4000) = 0 0

15678/0x9045d: munmap(0x10859A000, 0x4000) = 0 0

15678/0x9045d: munmap(0x10859E000, 0x58000) = 0 0

15678/0x9045d: open(".\0", 0x100000, 0x0) = 3 0

15678/0x9045d: fcntl(0x3, 0x32, 0x7FF7BA113290) = 0 0

15678/0x9045d: close(0x3) = 0 0

15678/0x9045d: fsgetpath(0x7FF7BA1132A0, 0x400, 0x7FF7BA113288) = 58 0

15678/0x9045d: fsgetpath(0x7FF7BA1132A0, 0x400, 0x7FF7BA113288) = 14 0

15678/0x9045d: csrctl(0x0, 0x7FF7BA1136AC, 0x4) = -1 1

15678/0x9045d: \_\_mac\_syscall(0x7FF8040EFE3B, 0x2, 0x7FF7BA113510) = 0 0

15678/0x9045d: csrctl(0x0, 0x7FF7BA1136BC, 0x4) = -1 1

15678/0x9045d: \_\_mac\_syscall(0x7FF8040ECDC6, 0x5A, 0x7FF7BA113650) = 0 0

dtrace: error on enabled probe ID 1741 (ID 573: syscall::sysctl:return): invalid kernel access in action #11 at DIF offset 28

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15678/0x9045d: open("/\0", 0x20100000, 0x0) = 3 0

15678/0x9045d: openat(0x3, "System/Cryptexes/OS\0", 0x100000, 0x0) = 4 0

15678/0x9045d: dup(0x4, 0x0, 0x0) = 5 0

15678/0x9045d: fstatat64(0x4, 0x7FF7BA1123F1, 0x7FF7BA1127F0) = 0 0

15678/0x9045d: openat(0x4, "System/Library/dyld/\0", 0x100000, 0x0) = 6 0

15678/0x9045d: fcntl(0x6, 0x32, 0x7FF7BA112480) = 0 0

15678/0x9045d: dup(0x6, 0x0, 0x0) = 7 0

15678/0x9045d: dup(0x5, 0x0, 0x0) = 8 0

15678/0x9045d: close(0x3) = 0 0

15678/0x9045d: close(0x5) = 0 0

15678/0x9045d: close(0x4) = 0 0

15678/0x9045d: close(0x6) = 0 0

15678/0x9045d: shared\_region\_check\_np(0x7FF7BA112D68, 0x0, 0x0) = 0 0

15678/0x9045d: fsgetpath(0x7FF7BA1132D0, 0x400, 0x7FF7BA113208) = 83 0

15678/0x9045d: fcntl(0x8, 0x32, 0x7FF7BA1132D0) = 0 0

15678/0x9045d: close(0x8) = 0 0

15678/0x9045d: close(0x7) = 0 0

15678/0x9045d: getfsstat64(0x0, 0x0, 0x2) = 7 0

15678/0x9045d: getfsstat64(0x106302AA0, 0x3B48, 0x2) = 7 0

15678/0x9045d: getattrlist("/\0", 0x7FF7BA113210, 0x7FF7BA113180) = 0 0

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/dyld/dyld\_shared\_cache\_x86\_64h\0", 0x7FF7BA113548, 0x0) = 0 0

dtrace: error on enabled probe ID 1690 (ID 845: syscall::stat64:return): invalid address (0x0) in action #12 at DIF offset 12

15678/0x9045d: stat64("/Users/mishazhadnov/Desktop/wD/OS\_labs\_3t/lab3/scr/parent\0", 0x7FF7BA1129E0, 0x0) = 0 0

15678/0x9045d: open("/Users/mishazhadnov/Desktop/wD/OS\_labs\_3t/lab3/scr/parent\0", 0x0, 0x0) = 3 0

15678/0x9045d: mmap(0x0, 0x8468, 0x1, 0x40002, 0x3, 0x0) = 0x106201000 0

15678/0x9045d: fcntl(0x3, 0x32, 0x7FF7BA112AF0) = 0 0

15678/0x9045d: close(0x3) = 0 0

15678/0x9045d: munmap(0x106201000, 0x8468) = 0 0

15678/0x9045d: stat64("/Users/mishazhadnov/Desktop/wD/OS\_labs\_3t/lab3/scr/parent\0", 0x7FF7BA112F40, 0x0) = 0 0

15678/0x9045d: stat64("/usr/lib/libSystem.B.dylib\0", 0x7FF7BA111F50, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/libSystem.B.dylib\0", 0x7FF7BA111F00, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/libSystem.B.dylib\0", 0x7FF7BA111F50, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/libobjc.A.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/libobjc.A.dylib\0", 0x7FF7BA10FB50, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/libobjc.A.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_blocks.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_blocks.dylib\0", 0x7FF7BA10FB40, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_blocks.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libxpc.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libxpc.dylib\0", 0x7FF7BA10FB50, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libxpc.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_trace.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_trace.dylib\0", 0x7FF7BA10FB40, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_trace.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libcorecrypto.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libcorecrypto.dylib\0", 0x7FF7BA10FB50, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libcorecrypto.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_malloc.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_malloc.dylib\0", 0x7FF7BA10FB40, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_malloc.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libdispatch.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libdispatch.dylib\0", 0x7FF7BA10FB50, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libdispatch.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_featureflags.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_featureflags.dylib\0", 0x7FF7BA10FB40, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_featureflags.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_c.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_c.dylib\0", 0x7FF7BA10FB50, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_c.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/libc++.1.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/libc++.1.dylib\0", 0x7FF7BA10FB50, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/libc++.1.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/libc++abi.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/libc++abi.dylib\0", 0x7FF7BA10FB50, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/libc++abi.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libdyld.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libdyld.dylib\0", 0x7FF7BA10FB50, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libdyld.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_info.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_info.dylib\0", 0x7FF7BA10FB50, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_info.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_darwin.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_darwin.dylib\0", 0x7FF7BA10FB40, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_darwin.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_notify.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_notify.dylib\0", 0x7FF7BA10FB40, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_notify.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_networkextension.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_networkextension.dylib\0", 0x7FF7BA10FB40, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_networkextension.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_asl.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_asl.dylib\0", 0x7FF7BA10FB50, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_asl.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_symptoms.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_symptoms.dylib\0", 0x7FF7BA10FB40, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_symptoms.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_containermanager.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_containermanager.dylib\0", 0x7FF7BA10FB40, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_containermanager.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_configuration.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_configuration.dylib\0", 0x7FF7BA10FB40, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_configuration.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_sandbox.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_sandbox.dylib\0", 0x7FF7BA10FB40, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_sandbox.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libquarantine.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libquarantine.dylib\0", 0x7FF7BA10FB50, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libquarantine.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_coreservices.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_coreservices.dylib\0", 0x7FF7BA10FB40, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_coreservices.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_m.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_m.dylib\0", 0x7FF7BA10FB50, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_m.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libmacho.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libmacho.dylib\0", 0x7FF7BA10FB50, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libmacho.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libcommonCrypto.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libcommonCrypto.dylib\0", 0x7FF7BA10FB40, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libcommonCrypto.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libunwind.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libunwind.dylib\0", 0x7FF7BA10FB50, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libunwind.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/liboah.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/liboah.dylib\0", 0x7FF7BA10FB50, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/liboah.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libcopyfile.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libcopyfile.dylib\0", 0x7FF7BA10FB50, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libcopyfile.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libcompiler\_rt.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libcompiler\_rt.dylib\0", 0x7FF7BA10FB50, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libcompiler\_rt.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_collections.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_collections.dylib\0", 0x7FF7BA10FB40, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_collections.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_secinit.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_secinit.dylib\0", 0x7FF7BA10FB40, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_secinit.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libremovefile.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libremovefile.dylib\0", 0x7FF7BA10FB50, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libremovefile.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libkeymgr.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libkeymgr.dylib\0", 0x7FF7BA10FB50, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libkeymgr.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_dnssd.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_dnssd.dylib\0", 0x7FF7BA10FB40, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_dnssd.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libcache.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libcache.dylib\0", 0x7FF7BA10FB50, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libcache.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/libSystem.B.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/libSystem.B.dylib\0", 0x7FF7BA10FB50, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/libSystem.B.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_darwindirectory.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_darwindirectory.dylib\0", 0x7FF7BA10FB40, 0x0) = -1 2

15678/0x9045d: stat64("/usr/lib/system/libsystem\_darwindirectory.dylib\0", 0x7FF7BA10FBA0, 0x0) = -1 2

15678/0x9045d: open("/dev/dtracehelper\0", 0x2, 0x0) = 3 0

15678/0x9045d: ioctl(0x3, 0x80086804, 0x7FF7BA111B38) = 0 0

15678/0x9045d: close(0x3) = 0 0

15678/0x9045d: open("/Users/mishazhadnov/Desktop/wD/OS\_labs\_3t/lab3/scr/parent\0", 0x0, 0x0) = 3 0

15678/0x9045d: \_\_mac\_syscall(0x7FF8040EFE3B, 0x2, 0x7FF7BA1110F0) = 0 0

15678/0x9045d: map\_with\_linking\_np(0x7FF7BA111040, 0x1, 0x7FF7BA111070) = -1 22

15678/0x9045d: close(0x3) = 0 0

15678/0x9045d: mprotect(0x105DF0000, 0x4000, 0x1) = 0 0

15678/0x9045d: shared\_region\_check\_np(0xFFFFFFFFFFFFFFFF, 0x0, 0x0) = 0 0

15678/0x9045d: mprotect(0x106300000, 0x40000, 0x1) = 0 0

15678/0x9045d: access("/AppleInternal/XBS/.isChrooted\0", 0x0, 0x0) = -1 2

15678/0x9045d: bsdthread\_register(0x7FF8043E2B9C, 0x7FF8043E2B88, 0x2000) = 1073742303 0

15678/0x9045d: getpid(0x0, 0x0, 0x0) = 15678 0

15678/0x9045d: shm\_open(0x7FF804285F42, 0x0, 0x4284388) = 3 0

15678/0x9045d: fstat64(0x3, 0x7FF7BA112060, 0x0) = 0 0

15678/0x9045d: mmap(0x0, 0x4000, 0x1, 0x40001, 0x3, 0x0) = 0x105DFA000 0

15678/0x9045d: close(0x3) = 0 0

15678/0x9045d: ioctl(0x2, 0x4004667A, 0x7FF7BA112124) = 0 0

15678/0x9045d: mprotect(0x106206000, 0x1000, 0x0) = 0 0

15678/0x9045d: mprotect(0x10620D000, 0x1000, 0x0) = 0 0

15678/0x9045d: mprotect(0x10620E000, 0x1000, 0x0) = 0 0

15678/0x9045d: mprotect(0x106215000, 0x1000, 0x0) = 0 0

15678/0x9045d: mprotect(0x106201000, 0x98, 0x1) = 0 0

15678/0x9045d: mprotect(0x106201000, 0x98, 0x3) = 0 0

15678/0x9045d: mprotect(0x106201000, 0x98, 0x1) = 0 0

15678/0x9045d: mprotect(0x105DFE000, 0x1000, 0x1) = 0 0

15678/0x9045d: mprotect(0x106216000, 0x98, 0x1) = 0 0

15678/0x9045d: mprotect(0x106216000, 0x98, 0x3) = 0 0

15678/0x9045d: mprotect(0x106216000, 0x98, 0x1) = 0 0

15678/0x9045d: mprotect(0x106201000, 0x98, 0x3) = 0 0

15678/0x9045d: mprotect(0x106201000, 0x98, 0x1) = 0 0

15678/0x9045d: mprotect(0x105DFE000, 0x1000, 0x3) = 0 0

15678/0x9045d: mprotect(0x105DFE000, 0x1000, 0x1) = 0 0

15678/0x9045d: mprotect(0x106300000, 0x40000, 0x3) = 0 0

15678/0x9045d: mprotect(0x106300000, 0x40000, 0x1) = 0 0

15678/0x9045d: issetugid(0x0, 0x0, 0x0) = 0 0

15678/0x9045d: mprotect(0x106300000, 0x40000, 0x3) = 0 0

15678/0x9045d: getentropy(0x7FF7BA111950, 0x20, 0x0) = 0 0

15678/0x9045d: mprotect(0x106300000, 0x40000, 0x1) = 0 0

15678/0x9045d: mprotect(0x106300000, 0x40000, 0x3) = 0 0

15678/0x9045d: mprotect(0x106300000, 0x40000, 0x1) = 0 0

15678/0x9045d: getattrlist("/Users/mishazhadnov/Desktop/wD/OS\_labs\_3t/lab3/scr/parent\0", 0x7FF7BA112000, 0x7FF7BA112018) = 0 0

15678/0x9045d: access("/Users/mishazhadnov/Desktop/wD/OS\_labs\_3t/lab3/scr\0", 0x4, 0x0) = 0 0

15678/0x9045d: open("/Users/mishazhadnov/Desktop/wD/OS\_labs\_3t/lab3/scr\0", 0x0, 0x0) = 3 0

15678/0x9045d: fstat64(0x3, 0x7F84BE704530, 0x0) = 0 0

15678/0x9045d: csrctl(0x0, 0x7FF7BA11225C, 0x4) = -1 1

15678/0x9045d: fgetattrlist(0x3, 0x7FF7BA112270, 0x7FF7BA112290) = 0 0

15678/0x9045d: \_\_mac\_syscall(0x7FF80F7A36A4, 0x2, 0x7FF7BA112290) = 0 0

15678/0x9045d: fcntl(0x3, 0x32, 0x7FF7BA111F10) = 0 0

15678/0x9045d: close(0x3) = 0 0

15678/0x9045d: open("/Users/mishazhadnov/Desktop/wD/OS\_labs\_3t/lab3/scr/Info.plist\0", 0x0, 0x0) = -1 2

15678/0x9045d: proc\_info(0x2, 0x3D3E, 0xD) = 64 0

15678/0x9045d: csops\_audittoken(0x3D3E, 0x10, 0x7FF7BA112260) = -1 22

dtrace: error on enabled probe ID 1741 (ID 573: syscall::sysctl:return): invalid kernel access in action #11 at DIF offset 28

dtrace: error on enabled probe ID 1741 (ID 573: syscall::sysctl:return): invalid kernel access in action #11 at DIF offset 28

15678/0x9045d: csops(0x3D3E, 0x0, 0x7FF7BA1126C4) = 0 0

15678/0x9045d: mprotect(0x106300000, 0x40000, 0x3) = 0 0

15678/0x9045d: getrlimit(0x1008, 0x7FF7BA112FA0, 0x0) = 0 0

15678/0x9045d: fstat64(0x0, 0x7FF7BA112F88, 0x0) = 0 0

15678/0x9045d: ioctl(0x0, 0x4004667A, 0x7FF7BA112FD4) = 0 0

test\_ok.txt

(child)ftruncate: here is a problem

: Invalid argument

shm\_open: here is a problem

: No such file or directory

dtrace: error on enabled probe ID 1714 (ID 961: syscall::read\_nocancel:return): invalid kernel access in action #13 at DIF offset 68

15678/0x9045d: open("test\_ok.txt\0", 0x0, 0x0) = 3 0

15678/0x9045d: fstat64(0x3, 0x7FF7BA113690, 0x0) = 0 0

15678/0x9045d: fork() = 15683 0

15683/0x904f3: fork() = 0 0

15683/0x904f3: thread\_selfid(0x0, 0x0, 0x0) = 591091 0

15683/0x904f3: bsdthread\_register(0x7FF8043E2B9C, 0x7FF8043E2B88, 0x2000) = -1 22

15683/0x904f3: mprotect(0x106216000, 0x98, 0x3) = 0 0

15683/0x904f3: mprotect(0x106216000, 0x98, 0x1) = 0 0

15683/0x904f3: dup2(0x3, 0x0, 0x0) = 0 0

dtrace: error on enabled probe ID 1688 (ID 287: syscall::execve:return): invalid address (0x105deff20) in action #12 at DIF offset 12

15683/0x904f4: fork() = 0 0

15683/0x904f4: mprotect(0x104451000, 0x8000, 0x1) = 0 0

15683/0x904f4: thread\_selfid(0x0, 0x0, 0x0) = 591092 0

15683/0x904f4: shared\_region\_check\_np(0x7FF7BC285900, 0x0, 0x0) = 0 0

15683/0x904f4: thread\_selfid(0x0, 0x0, 0x0) = 591092 0

15683/0x904f4: getpid(0x0, 0x0, 0x0) = 15683 0

15683/0x904f4: proc\_info(0xF, 0x3D43, 0x0) = 0 0

15683/0x904f4: munmap(0x1043B1000, 0xA0000) = 0 0

15683/0x904f4: munmap(0x104451000, 0x8000) = 0 0

15683/0x904f4: munmap(0x104459000, 0x4000) = 0 0

15683/0x904f4: munmap(0x10445D000, 0x4000) = 0 0

15683/0x904f4: munmap(0x104461000, 0x58000) = 0 0

15683/0x904f4: open(".\0", 0x100000, 0x0) = 4 0

15683/0x904f4: fcntl(0x4, 0x32, 0x7FF7BC285290) = 0 0

15683/0x904f4: close(0x4) = 0 0

15683/0x904f4: fsgetpath(0x7FF7BC2852A0, 0x400, 0x7FF7BC285288) = 57 0

15683/0x904f4: fsgetpath(0x7FF7BC2852A0, 0x400, 0x7FF7BC285288) = 14 0

15683/0x904f4: csrctl(0x0, 0x7FF7BC2856AC, 0x4) = -1 1

15683/0x904f4: \_\_mac\_syscall(0x7FF8040EFE3B, 0x2, 0x7FF7BC285510) = 0 0

15683/0x904f4: csrctl(0x0, 0x7FF7BC2856BC, 0x4) = -1 1

15683/0x904f4: \_\_mac\_syscall(0x7FF8040ECDC6, 0x5A, 0x7FF7BC285650) = 0 0

dtrace: error on enabled probe ID 1741 (ID 573: syscall::sysctl:return): invalid kernel access in action #11 at DIF offset 28

dtrace: error on enabled probe ID 1741 (ID 573: syscall::sysctl:return): invalid kernel access in action #11 at DIF offset 28

dtrace: error on enabled probe ID 1741 (ID 573: syscall::sysctl:return): invalid kernel access in action #11 at DIF offset 28

dtrace: error on enabled probe ID 1741 (ID 573: syscall::sysctl:return): invalid kernel access in action #11 at DIF offset 28

15683/0x904f4: open("/\0", 0x20100000, 0x0) = 4 0

15683/0x904f4: openat(0x4, "System/Cryptexes/OS\0", 0x100000, 0x0) = 5 0

15683/0x904f4: dup(0x5, 0x0, 0x0) = 6 0

15683/0x904f4: fstatat64(0x5, 0x7FF7BC2843F1, 0x7FF7BC2847F0) = 0 0

15683/0x904f4: openat(0x5, "System/Library/dyld/\0", 0x100000, 0x0) = 7 0

15683/0x904f4: fcntl(0x7, 0x32, 0x7FF7BC284480) = 0 0

15683/0x904f4: dup(0x7, 0x0, 0x0) = 8 0

15683/0x904f4: dup(0x6, 0x0, 0x0) = 9 0

15683/0x904f4: close(0x4) = 0 0

15683/0x904f4: close(0x6) = 0 0

15683/0x904f4: close(0x5) = 0 0

15683/0x904f4: close(0x7) = 0 0

15683/0x904f4: shared\_region\_check\_np(0x7FF7BC284D68, 0x0, 0x0) = 0 0

15683/0x904f4: fsgetpath(0x7FF7BC2852D0, 0x400, 0x7FF7BC285208) = 83 0

15683/0x904f4: fcntl(0x9, 0x32, 0x7FF7BC2852D0) = 0 0

15683/0x904f4: close(0x9) = 0 0

15683/0x904f4: close(0x8) = 0 0

15683/0x904f4: getfsstat64(0x0, 0x0, 0x2) = 7 0

15683/0x904f4: getfsstat64(0x104202AA0, 0x3B48, 0x2) = 7 0

15683/0x904f4: getattrlist("/\0", 0x7FF7BC285210, 0x7FF7BC285180) = 0 0

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/System/Library/dyld/dyld\_shared\_cache\_x86\_64h\0", 0x7FF7BC285548, 0x0) = 0 0

dtrace: error on enabled probe ID 1690 (ID 845: syscall::stat64:return): invalid address (0x0) in action #12 at DIF offset 12

15683/0x904f4: stat64("/Users/mishazhadnov/Desktop/wD/OS\_labs\_3t/lab3/scr/child\0", 0x7FF7BC2849E0, 0x0) = 0 0

15683/0x904f4: open("/Users/mishazhadnov/Desktop/wD/OS\_labs\_3t/lab3/scr/child\0", 0x0, 0x0) = 4 0

15683/0x904f4: mmap(0x0, 0x8270, 0x1, 0x40002, 0x4, 0x0) = 0x103C86000 0

15683/0x904f4: fcntl(0x4, 0x32, 0x7FF7BC284AF0) = 0 0

15683/0x904f4: close(0x4) = 0 0

15683/0x904f4: munmap(0x103C86000, 0x8270) = 0 0

15683/0x904f4: stat64("/Users/mishazhadnov/Desktop/wD/OS\_labs\_3t/lab3/scr/child\0", 0x7FF7BC284F40, 0x0) = 0 0

15683/0x904f4: stat64("/usr/lib/libSystem.B.dylib\0", 0x7FF7BC283F50, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/libSystem.B.dylib\0", 0x7FF7BC283F00, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/libSystem.B.dylib\0", 0x7FF7BC283F50, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/libobjc.A.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/libobjc.A.dylib\0", 0x7FF7BC281B50, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/libobjc.A.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_blocks.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_blocks.dylib\0", 0x7FF7BC281B40, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_blocks.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libxpc.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libxpc.dylib\0", 0x7FF7BC281B50, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libxpc.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_trace.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_trace.dylib\0", 0x7FF7BC281B40, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_trace.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libcorecrypto.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libcorecrypto.dylib\0", 0x7FF7BC281B50, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libcorecrypto.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_malloc.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_malloc.dylib\0", 0x7FF7BC281B40, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_malloc.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libdispatch.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libdispatch.dylib\0", 0x7FF7BC281B50, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libdispatch.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_featureflags.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_featureflags.dylib\0", 0x7FF7BC281B40, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_featureflags.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_c.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_c.dylib\0", 0x7FF7BC281B50, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_c.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/libc++.1.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/libc++.1.dylib\0", 0x7FF7BC281B50, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/libc++.1.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/libc++abi.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/libc++abi.dylib\0", 0x7FF7BC281B50, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/libc++abi.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libdyld.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libdyld.dylib\0", 0x7FF7BC281B50, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libdyld.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_info.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_info.dylib\0", 0x7FF7BC281B50, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_info.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_darwin.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_darwin.dylib\0", 0x7FF7BC281B40, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_darwin.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_notify.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_notify.dylib\0", 0x7FF7BC281B40, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_notify.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_networkextension.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_networkextension.dylib\0", 0x7FF7BC281B40, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_networkextension.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_asl.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_asl.dylib\0", 0x7FF7BC281B50, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_asl.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_symptoms.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_symptoms.dylib\0", 0x7FF7BC281B40, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_symptoms.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_containermanager.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_containermanager.dylib\0", 0x7FF7BC281B40, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_containermanager.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_configuration.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_configuration.dylib\0", 0x7FF7BC281B40, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_configuration.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_sandbox.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_sandbox.dylib\0", 0x7FF7BC281B40, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_sandbox.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libquarantine.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libquarantine.dylib\0", 0x7FF7BC281B50, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libquarantine.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_coreservices.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_coreservices.dylib\0", 0x7FF7BC281B40, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_coreservices.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_m.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_m.dylib\0", 0x7FF7BC281B50, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_m.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libmacho.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libmacho.dylib\0", 0x7FF7BC281B50, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libmacho.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libcommonCrypto.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libcommonCrypto.dylib\0", 0x7FF7BC281B40, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libcommonCrypto.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libunwind.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libunwind.dylib\0", 0x7FF7BC281B50, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libunwind.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/liboah.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/liboah.dylib\0", 0x7FF7BC281B50, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/liboah.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libcopyfile.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libcopyfile.dylib\0", 0x7FF7BC281B50, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libcopyfile.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libcompiler\_rt.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libcompiler\_rt.dylib\0", 0x7FF7BC281B50, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libcompiler\_rt.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_collections.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_collections.dylib\0", 0x7FF7BC281B40, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_collections.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_secinit.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_secinit.dylib\0", 0x7FF7BC281B40, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_secinit.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libremovefile.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libremovefile.dylib\0", 0x7FF7BC281B50, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libremovefile.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libkeymgr.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libkeymgr.dylib\0", 0x7FF7BC281B50, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libkeymgr.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_dnssd.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_dnssd.dylib\0", 0x7FF7BC281B40, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_dnssd.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libcache.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libcache.dylib\0", 0x7FF7BC281B50, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libcache.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/libSystem.B.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/libSystem.B.dylib\0", 0x7FF7BC281B50, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/libSystem.B.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_darwindirectory.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: stat64("/System/Volumes/Preboot/Cryptexes/OS/usr/lib/system/libsystem\_darwindirectory.dylib\0", 0x7FF7BC281B40, 0x0) = -1 2

15683/0x904f4: stat64("/usr/lib/system/libsystem\_darwindirectory.dylib\0", 0x7FF7BC281BA0, 0x0) = -1 2

15683/0x904f4: open("/dev/dtracehelper\0", 0x2, 0x0) = 4 0

15683/0x904f4: ioctl(0x4, 0x80086804, 0x7FF7BC283B38) = 0 0

15683/0x904f4: close(0x4) = 0 0

15683/0x904f4: open("/Users/mishazhadnov/Desktop/wD/OS\_labs\_3t/lab3/scr/child\0", 0x0, 0x0) = 4 0

15683/0x904f4: \_\_mac\_syscall(0x7FF8040EFE3B, 0x2, 0x7FF7BC2830F0) = 0 0

15683/0x904f4: map\_with\_linking\_np(0x7FF7BC2830A0, 0x1, 0x7FF7BC2830D0) = -1 22

15683/0x904f4: close(0x4) = 0 0

15683/0x904f4: mprotect(0x103C7E000, 0x4000, 0x1) = 0 0

15683/0x904f4: shared\_region\_check\_np(0xFFFFFFFFFFFFFFFF, 0x0, 0x0) = 0 0

15683/0x904f4: mprotect(0x104200000, 0x40000, 0x1) = 0 0

15683/0x904f4: access("/AppleInternal/XBS/.isChrooted\0", 0x0, 0x0) = -1 2

15683/0x904f4: bsdthread\_register(0x7FF8043E2B9C, 0x7FF8043E2B88, 0x2000) = 1073742303 0

15683/0x904f4: getpid(0x0, 0x0, 0x0) = 15683 0

15683/0x904f4: shm\_open(0x7FF804285F42, 0x0, 0x4284388) = 4 0

15683/0x904f4: fstat64(0x4, 0x7FF7BC284060, 0x0) = 0 0

15683/0x904f4: mmap(0x0, 0x4000, 0x1, 0x40001, 0x4, 0x0) = 0x103C88000 0

15683/0x904f4: close(0x4) = 0 0

15683/0x904f4: ioctl(0x2, 0x4004667A, 0x7FF7BC284124) = 0 0

15683/0x904f4: mprotect(0x103C91000, 0x1000, 0x0) = 0 0

15683/0x904f4: mprotect(0x103C98000, 0x1000, 0x0) = 0 0

15683/0x904f4: mprotect(0x103C99000, 0x1000, 0x0) = 0 0

15683/0x904f4: mprotect(0x103CA0000, 0x1000, 0x0) = 0 0

15683/0x904f4: mprotect(0x103C8C000, 0x98, 0x1) = 0 0

15683/0x904f4: mprotect(0x103C8C000, 0x98, 0x3) = 0 0

15683/0x904f4: mprotect(0x103C8C000, 0x98, 0x1) = 0 0

15683/0x904f4: mprotect(0x103CA1000, 0x1000, 0x1) = 0 0

15683/0x904f4: mprotect(0x103CA2000, 0x98, 0x1) = 0 0

15683/0x904f4: mprotect(0x103CA2000, 0x98, 0x3) = 0 0

15683/0x904f4: mprotect(0x103CA2000, 0x98, 0x1) = 0 0

15683/0x904f4: mprotect(0x103C8C000, 0x98, 0x3) = 0 0

15683/0x904f4: mprotect(0x103C8C000, 0x98, 0x1) = 0 0

15683/0x904f4: mprotect(0x103CA1000, 0x1000, 0x3) = 0 0

15683/0x904f4: mprotect(0x103CA1000, 0x1000, 0x1) = 0 0

15683/0x904f4: mprotect(0x104200000, 0x40000, 0x3) = 0 0

15683/0x904f4: mprotect(0x104200000, 0x40000, 0x1) = 0 0

15683/0x904f4: issetugid(0x0, 0x0, 0x0) = 0 0

15683/0x904f4: mprotect(0x104200000, 0x40000, 0x3) = 0 0

15683/0x904f4: getentropy(0x7FF7BC283950, 0x20, 0x0) = 0 0

15683/0x904f4: mprotect(0x104200000, 0x40000, 0x1) = 0 0

15683/0x904f4: mprotect(0x104200000, 0x40000, 0x3) = 0 0

15683/0x904f4: mprotect(0x104200000, 0x40000, 0x1) = 0 0

15683/0x904f4: getattrlist("/Users/mishazhadnov/Desktop/wD/OS\_labs\_3t/lab3/scr/child\0", 0x7FF7BC284000, 0x7FF7BC284018) = 0 0

15683/0x904f4: access("/Users/mishazhadnov/Desktop/wD/OS\_labs\_3t/lab3/scr\0", 0x4, 0x0) = 0 0

15683/0x904f4: open("/Users/mishazhadnov/Desktop/wD/OS\_labs\_3t/lab3/scr\0", 0x0, 0x0) = 4 0

15683/0x904f4: fstat64(0x4, 0x7F9BC8704530, 0x0) = 0 0

15683/0x904f4: csrctl(0x0, 0x7FF7BC28425C, 0x4) = -1 1

15683/0x904f4: fgetattrlist(0x4, 0x7FF7BC284270, 0x7FF7BC284290) = 0 0

15683/0x904f4: \_\_mac\_syscall(0x7FF80F7A36A4, 0x2, 0x7FF7BC284290) = 0 0

15683/0x904f4: fcntl(0x4, 0x32, 0x7FF7BC283F10) = 0 0

15683/0x904f4: close(0x4) = 0 0

15683/0x904f4: open("/Users/mishazhadnov/Desktop/wD/OS\_labs\_3t/lab3/scr/Info.plist\0", 0x0, 0x0) = -1 2

15683/0x904f4: proc\_info(0x2, 0x3D43, 0xD) = 64 0

15683/0x904f4: csops\_audittoken(0x3D43, 0x10, 0x7FF7BC284260) = -1 22

dtrace: error on enabled probe ID 1741 (ID 573: syscall::sysctl:return): invalid kernel access in action #11 at DIF offset 28

dtrace: error on enabled probe ID 1741 (ID 573: syscall::sysctl:return): invalid kernel access in action #11 at DIF offset 28

15683/0x904f4: csops(0x3D43, 0x0, 0x7FF7BC2846C4) = 0 0

15683/0x904f4: mprotect(0x104200000, 0x40000, 0x3) = 0 0

15683/0x904f4: shm\_open(0x103C7DEF8, 0x202, 0x180) = 4 0

15683/0x904f4: fstat64(0x0, 0x7FF7BC2856B8, 0x0) = 0 0

15683/0x904f4: ftruncate(0x4, 0x29, 0x0) = -1 22

15683/0x904f4: writev\_nocancel(0x2, 0x7FF7BC284E20, 0x4) = 56 0

15683/0x904f4: shm\_unlink(0x103C7DEF8, 0x0, 0x0) = 0 0

15683/0x904f4: close(0x4) = 0 0

15678/0x9045d: wait4(0xFFFFFFFFFFFFFFFF, 0x0, 0x0) = 15683 0

15678/0x9045d: shm\_open(0x105DEFF38, 0x0, 0x180) = -1 2

15678/0x9045d: writev\_nocancel(0x2, 0x7FF7BA112E00, 0x4) = 57 0

**Вывод**

Данная лабораторная работа, на мой взгляд, служит отличным дополнением к первой лабораторной работе. Благодаря поставленному заданию я расширил свой функционал работы с процессами и освоил принцип реализации file-mapping.