

Laboratorio#1

Ejercicio#1

```
File Edit View Terminal Help
os@debian:~$ nano
os@debian:~$ nano
os@debian:~$ nano
os@debian:~$

^G Get Help  ^O WriteOut  ^R Read File  ^Y Prev Page  ^K Cut Text   ^C Cur Pos
^X Exit      ^J Justify   ^W Where Is   ^V Next Page  ^U UnCut Text ^T To Spell

Save modified buffer (ANSWERING "No" WILL DESTROY CHANGES) ?
Y Yes
N No          ^C Cancel

File Name to Write:
^G Get Help    M-D DOS Format  M-A Append     M-B Backup File
^C Cancel      M-M Mac Format  M-P Prepend

os@debian:~$ ./Ejercicio_1
Hello World!
2749
os@debian:~$ ./Ejercicio_1
Hello World!
2750
os@debian:~$ ./Ejercicio_1
Hello World!
2751
os@debian:~$
```

La variación del número es debido a que no es en el mismo número de proceso en el que se hace, por lo que el proceso cambia de ID. Se puede notar que se le va agregando 1 a cada proceso, debido a que se pidió uno detrás del otro.

```
os@debian:~$ gcc -o ejerciciob Ejerciciob.c
os@debian:~$ ./ejerciciob
2995
Hello World!
2995
os@debian:~$ Hello World!
2996
```

Por ser un fork(), se estan ejecutando dos procesos a la vez por lo que hay dos PIDs y en uno de estos se esta llamando el pid del programa anterior por lo que se repite un PID.

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
1	root	20	0	2036	708	628	S	0.0	0.2	0:01.04	init
2	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kthreadd
3	root	RT	0	0	0	0	S	0.0	0.0	0:00.00	migration/0
4	root	20	0	0	0	0	S	0.0	0.0	0:00.03	ksoftirqd/0
5	root	RT	0	0	0	0	S	0.0	0.0	0:00.00	watchdog/0
6	root	20	0	0	0	0	S	0.0	0.0	0:00.34	events/0
7	root	20	0	0	0	0	S	0.0	0.0	0:00.00	cpuset
8	root	20	0	0	0	0	S	0.0	0.0	0:00.00	khelper
9	root	20	0	0	0	0	S	0.0	0.0	0:00.00	netns
10	root	20	0	0	0	0	S	0.0	0.0	0:00.00	async/mgr
11	root	20	0	0	0	0	S	0.0	0.0	0:00.00	pm
12	root	20	0	0	0	0	S	0.0	0.0	0:00.03	sync_supers
13	root	20	0	0	0	0	S	0.0	0.0	0:00.04	bdi-default
14	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kintegrityd/0
15	root	20	0	0	0	0	S	0.0	0.0	0:00.03	kblockd/0
16	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kacpid
17	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kacpi_notify

El primer proceso es init, es el proceso padre principal. Este proceso se mantiene corriendo hasta que el sistema se apague, y es iniciado por el kernel al encender el sistema.

Ejercicio#2

a.

- open():
Abre el archivo especificado por nombre de ruta.
- close():
Cierra un archivo, de modo que ya no se refiere a cualquier archivo y se puede reutilizar.
- read():
`ssize_t read(int fd, void *buf, size_t count);`
Intenta leer hasta count bytes del archivo fd en el buffer comenzando en buf.
- write():
`ssize_t write(int fd, const void *buf, size_t count);`
Escribe hasta count bytes desde el búfer comenzando en buf al archivo al que hace referencia el descriptor de archivo fd.

b.

```
#include<stdio.h>
#include<unistd.h>

int main(int argc, char* argv[]){
    char linea[1024];
    FILE *readfile;
    FILE *writefile;

    readfile = fopen(argv[1], "r");
    writefile = fopen(argv[2], "w");
    while(fgets(linea, 1024, (FILE*) readfile)){
        fprintf(writefile, "%s", linea);
    }
    fclose(readfile);
    fclose(writefile);
}
```

c.

```
os@debian:~$ sudo apt-get install strace
[sudo] password for os:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  strace
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 122 kB of archives.
After this operation, 303 kB of additional disk space will be used.
WARNING: The following packages cannot be authenticated!
  strace
Install these packages without verification [y/N]?
Install these packages without verification [y/N]? y
Err http://ftp.us.debian.org/debian/ squeeze/main strace i386 4.5.20-2
  404 Not Found [IP: 208.80.154.15 80]
Failed to fetch http://ftp.us.debian.org/debian/pool/main/s/strace/strace_4.5.20-2_i386.deb 404 Not Found [IP: 208.80.154.15 80]
E: Unable to fetch some archives, maybe run apt-get update or try with --fix-missing?
```

Después de las modificaciones:

```

os@debian:/etc/apt$ sudo apt-get install strace
Reading package lists... Done
Building dependency tree
Reading state information... Done
strace is already the newest version.
0 upgraded, 0 newly installed, 0 to remove and 228 not upgraded.
os@debian:/etc/apt$

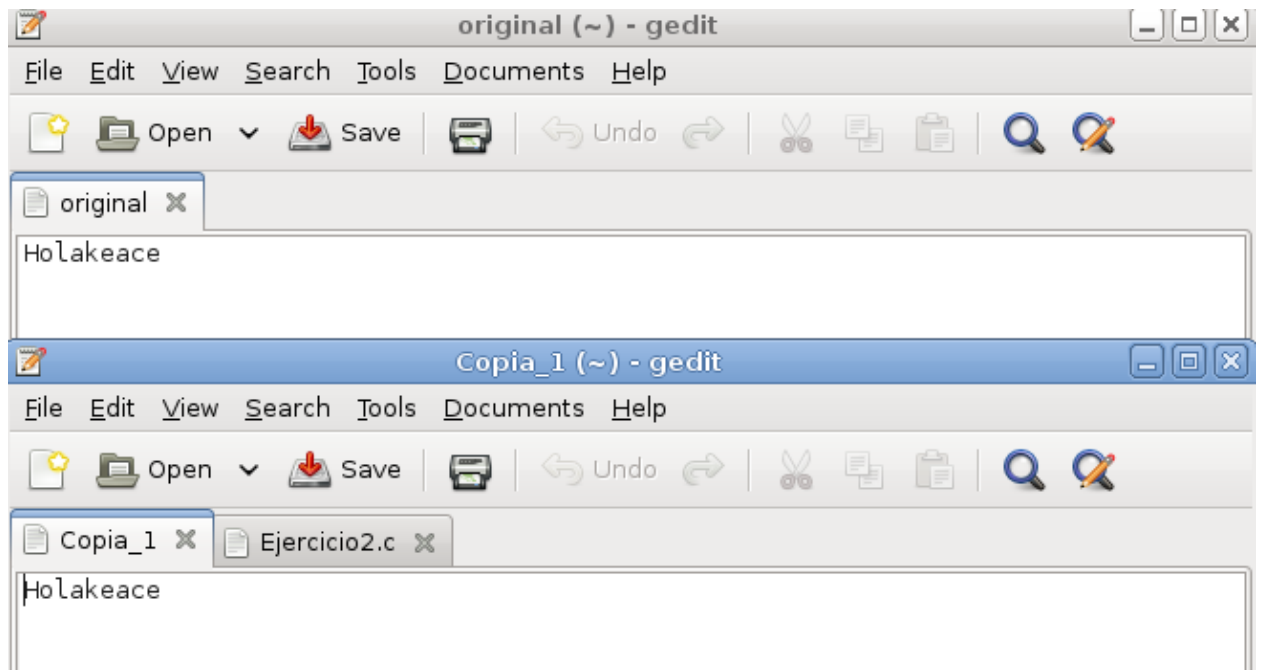
```

d.

```

os@debian:~$ gcc -o ejercicio2 Ejercicio2.c
os@debian:~$ strace ./ejercicio2 original Copia_1
execve("./ejercicio2", ["/ejercicio2", "original", "Copia_1"], [/* 34 vars */])
    = 0
brk(0)
    = 0x9c09000
access("/etc/ld.so.nohwcap", F_OK)
    = -1 ENOENT (No such file or directory)
mmap2(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0xb7
770000
access("/etc/ld.so.preload", R_OK)
    = -1 ENOENT (No such file or directory)
open("/etc/ld.so.cache", O_RDONLY)
    = 3
fstat64(3, {st_mode=S_IFREG|0644, st_size=64828, ...}) = 0
mmap2(NULL, 64828, PROT_READ, MAP_PRIVATE, 3, 0) = 0xb7760000
close(3)
    = 0
access("/etc/ld.so.nohwcap", F_OK)
    = -1 ENOENT (No such file or directory)
open("/lib/i686/cmov/libc.so.6", O_RDONLY) = 3
read(3, "\177ELF\1\1\1\0\0\0\0\0\0\0\0\0\3\0\3\0\1\0\0\0n\1\0004\0\0\0"...
, 512) = 512
fstat64(3, {st_mode=S_IFREG|0755, st_size=1327556, ...}) = 0
mmap2(NULL, 1337704, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0xb
7619000
mprotect(0xb7759000, 4096, PROT_NONE)
    = 0
mmap2(0xb775a000, 12288, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWR
ITE, 3, 0x140) = 0xb775a000
mmap2(0xb775d000, 10600, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMO
US, -1, 0) = 0xb775d000
close(3)
    = 0
mmap2(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0xb7
618000
set_thread_area({entry_number:-1 -> 6, base_addr:0xb76186c0, limit:1048575, seg_
32bit:1, contents:0, read_exec_only:0, limit_in_pages:1, seg_not_present:0, usea
ble:1}) = 0
mprotect(0xb775a000, 8192, PROT_READ)
    = 0
mprotect(0xb778e000, 4096, PROT_READ)
    = 0
munmap(0xb7760000, 64828)
    = 0
brk(0)
    = 0x9c09000
brk(0x9c2a000)
    = 0x9c2a000
open("original", O_RDONLY)
    = 3
open("Copia_1", O_WRONLY|O_CREAT|O_TRUNC, 0666) = 4
fstat64(3, {st_mode=S_IFREG|0644, st_size=10, ...}) = 0
mmap2(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0xb7
76f000
read(3, "Holakeace\n", 4096)
    = 10
fstat64(4, {st_mode=S_IFREG|0644, st_size=0, ...}) = 0
mmap2(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0xb7
76e000
read(3, "", 4096)
    = 0
close(3)
    = 0
munmap(0xb776f000, 4096)
    = 0
write(4, "Holakeace\n", 10)
    = 10
close(4)
    = 0
munmap(0xb776e000, 4096)
    = 0

```



Ejercicio#3

a.

```
rs@debian:~$ cd ~  
rs@debian:~$ sudo cp -a /usr/src/linux-2.6.39.4 .  
rs@debian:~$
```

b. ,

```
.long sys_fallocate
.long sys_timerfd_settime      /* 325 */
.long sys_timerfd_gettime
.long sys_signalfd4
.long sys_eventfd2
.long sys_epoll_create1
.long sys_dup3                /* 330 */
.long sys_pipe2
.long sys_inotify_init1
.long sys_preadv
.long sys_pwritev
.long sys_rt_tgsigqueueinfo   /* 335 */
.long sys_perf_event_open
.long sys_recvmmsg
.long sys_fanotify_init
.long sys_fanotify_mark
.long sys_prlimit64           /* 340 */
.long sys_name_to_handle_at
.long sys_open_by_handle_at
.long sys_clock_adjtime
.long sys_syncfs
.long sys_mycall              /*345*/
```

c.

```
#define __NR_pipe2          331
#define __NR_inotify_init1  332
#define __NR_preadv         333
#define __NR_pwritev        334
#define __NR_rt_tsigqueueinfo 335
#define __NR_perf_event_open 336
#define __NR_recvmmsg       337
#define __NR_fanotify_init  338
#define __NR_fanotify_mark  339
#define __NR_prlimit64      340
#define __NR_name_to_handle_at 341
#define __NR_open_by_handle_at 342
#define __NR_clock_adjtime  343
#define __NR_syncfs         344
#define __NR_mycall         345

#ifdef __KERNEL__

#define NR_syscalls 346

#define __ARCH_WANT_IPC_PARSE_VERSION
#define __ARCH_WANT_OLD_READDIR
#define __ARCH_WANT_OLD_STAT
#define __ARCH_WANT_STAT64
```

d. J

e.

f. F

g. F

h. F

i. f