Universidad del Valle de Guatemala
Sistemas Operativos
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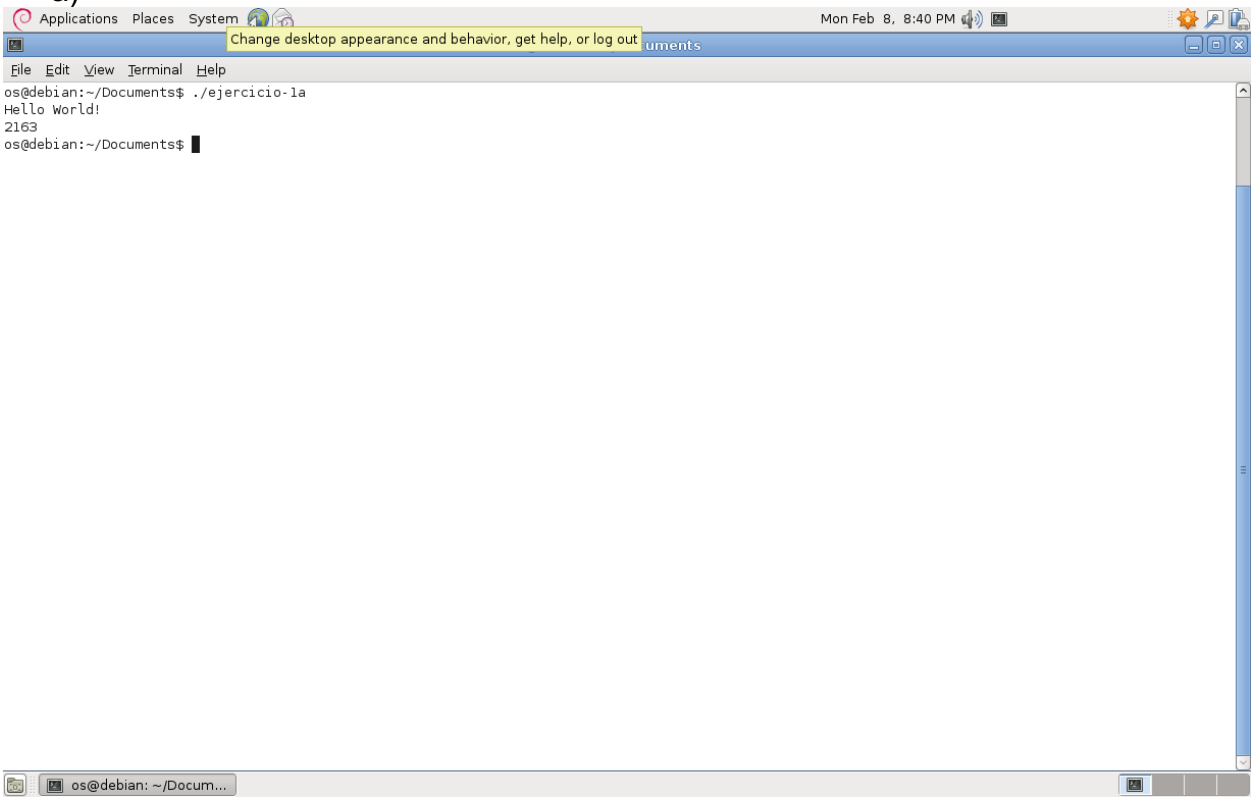
Carné 18037

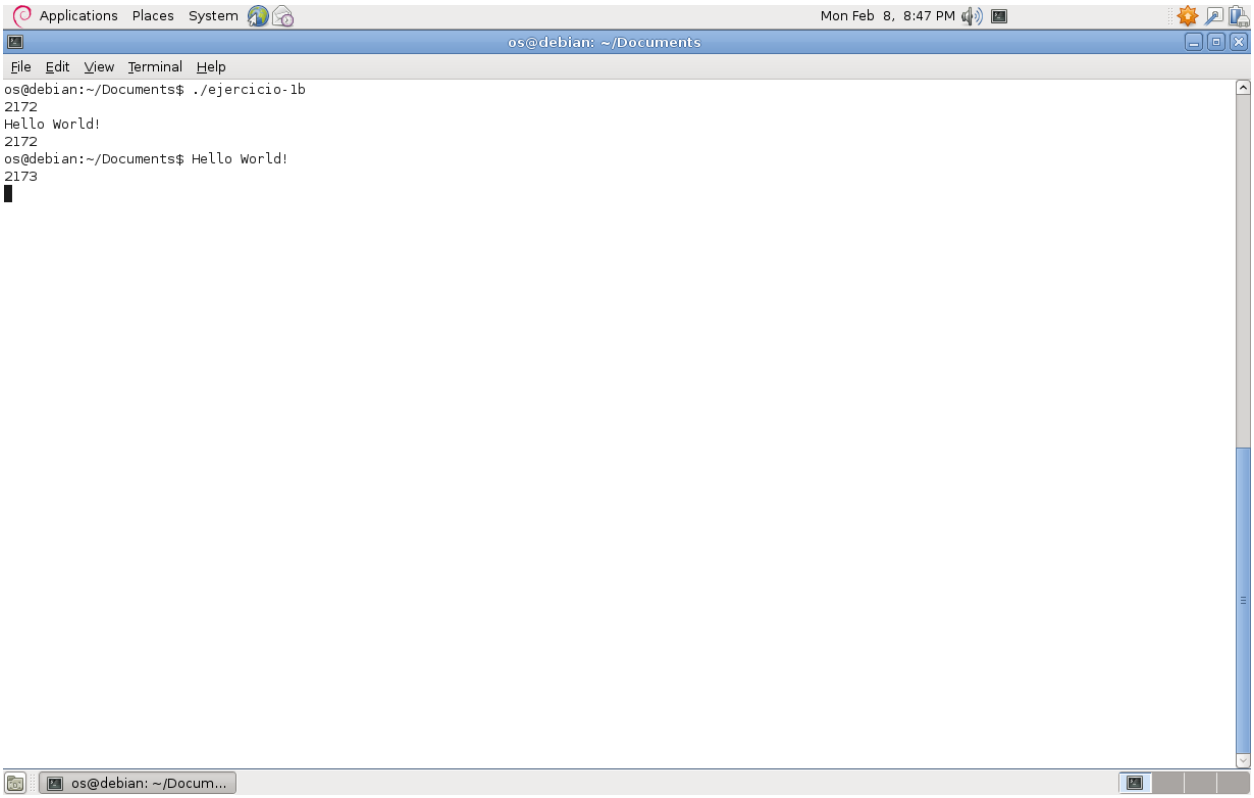
Tarea 1: Llamadas al sistema y kernel

Ejercicio 1

a)



b)



c)

a. Aparecen números diferentes cada vez puesto que el id del proceso cambia cada vez que ejecutamos el programa.

b. Aparecen dos números distintos puesto que el fork genera un nuevo proceso y este tiene un id diferente al momento de obtenerlo con la instrucción getpid.

c. Estos son iguales puesto que pertenecen al mismo proceso.

d. El primer proceso en la lista es el init. Este es un proceso daemon que inicializa el sistema operativo durante el booting. Este es arrancado por el kernel durante el proceso de booting.

Ejercicio 2

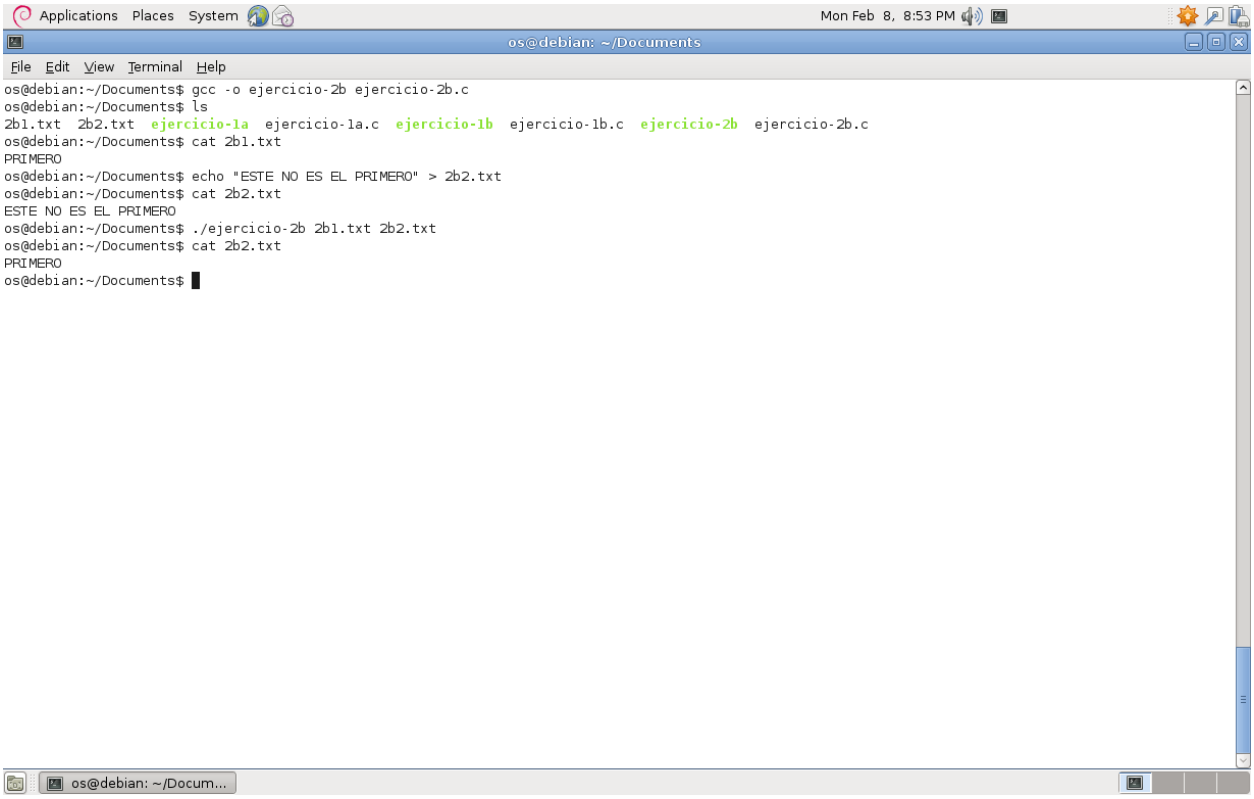
a) **open()** abre el archivo especificado por su pathname. Si es archivo especificado no existe, se puede crear con esta llamada. Retorna un file descriptor, un entero positivo que es usada en otras llamadas (read, write, lseek, fcntl, etc) para referirse al archivo abierto.

close() cierra un file descriptor, para que ya no tenga referencia a ningún archivo y no pueda ser reutilizado. Retorna 0 si es exitoso o -1 si hay error.

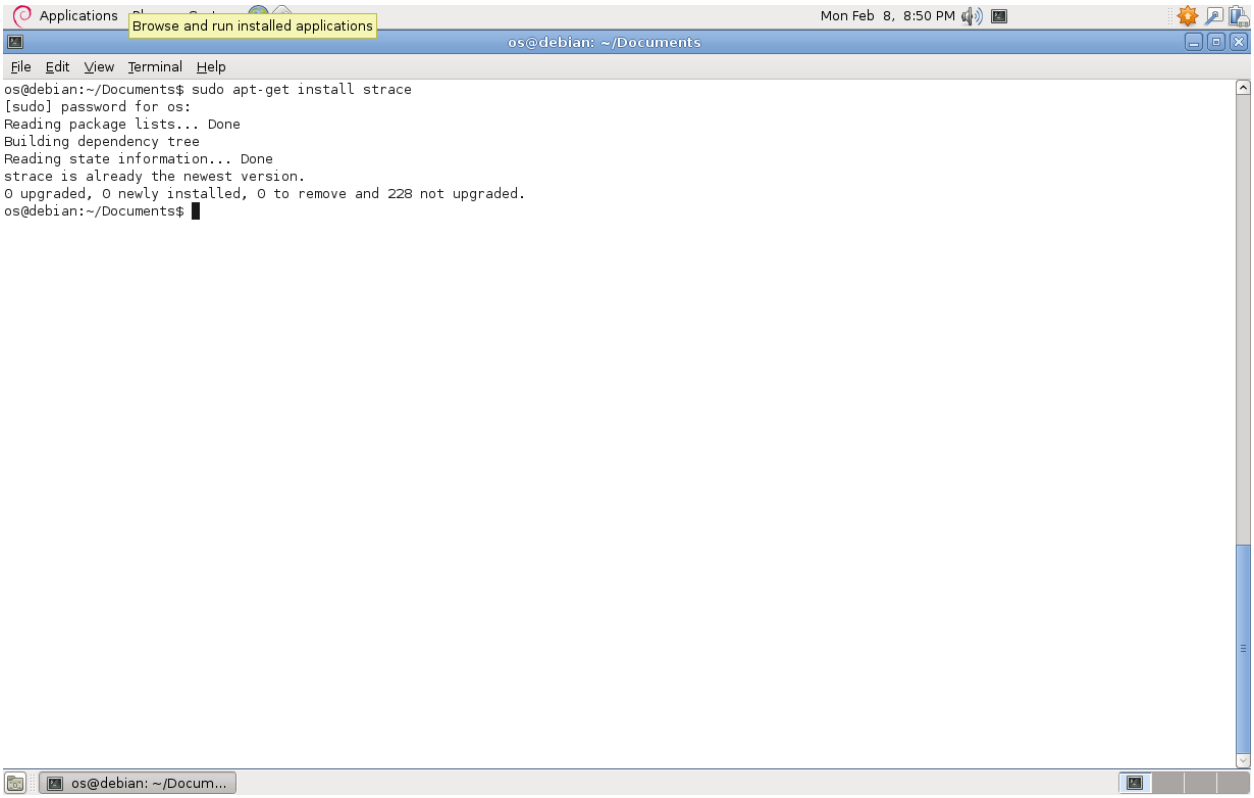
read(fd, buf, count) intenta leer hasta n bytes del file descriptor fd en el buffer empezando en buf. Si el offset del archivo es mayor o igual al fin del archivo, no lee y retorna 0.

write(fd, buf, count) escribe hasta n bytes del buffer empezando en buf a el archivo referido por el file descriptor fd. Retorna el número de bytes escritos si tiene éxito. En error, retorna -1.

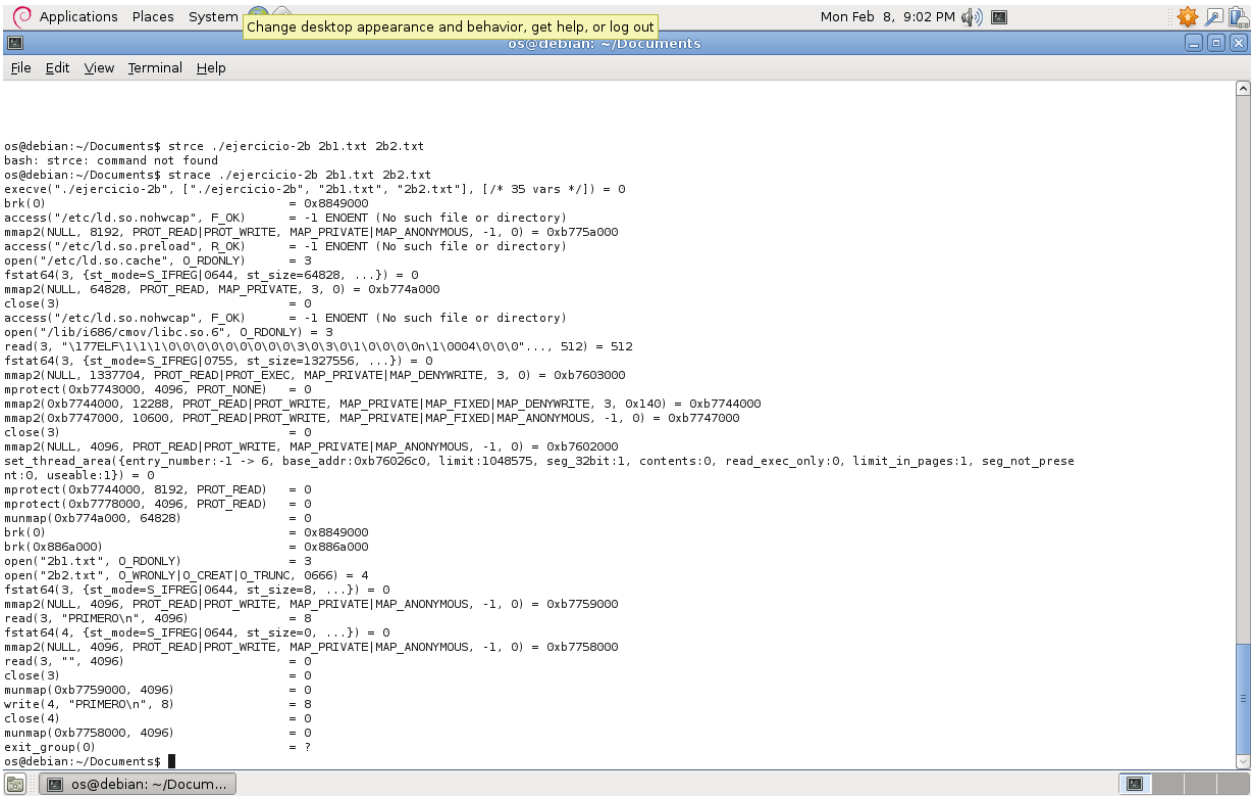
b)



c)


Applications
Browse and run installed applications
Mon Feb 8, 8:50 PM
os@debian: ~/Documents
File Edit View Terminal Help
os@debian:~/Documents$ sudo apt-get install strace
[sudo] password for os:
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:~/Documents$
os@debian: ~/Docum...

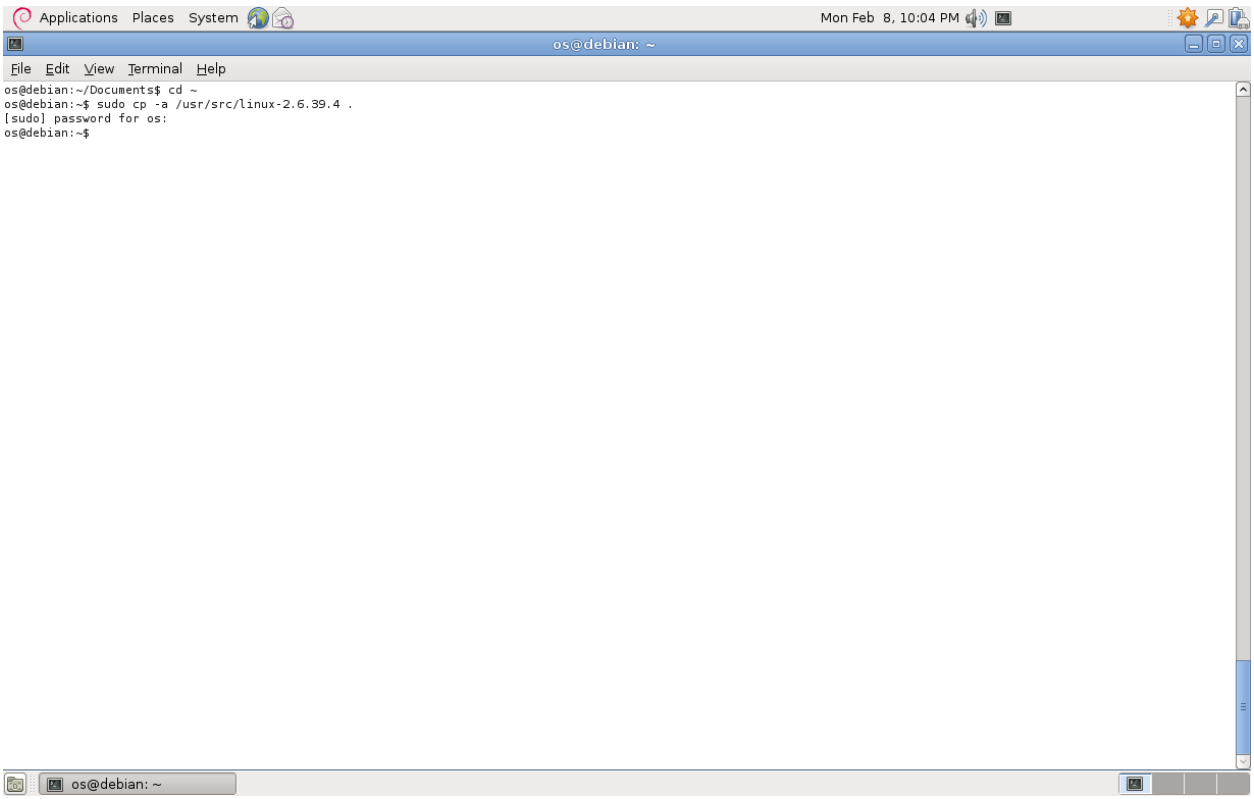
d)


Applications Places System
Change desktop appearance and behavior, get help, or log out
Mon Feb 8, 9:02 PM
os@debian: ~/Documents
File Edit View Terminal Help
os@debian:~/Documents$ strce ./ejercicio-2b 2b1.txt 2b2.txt
bash: strce: command not found
os@debian:~/Documents$ strace ./ejercicio-2b 2b1.txt 2b2.txt
execve("./ejercicio-2b", ["./ejercicio-2b", "2b1.txt", "2b2.txt"], [/* 35 vars */]) = 0
brk(0) = 0x8849000
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) = 0xb775a000
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) = 0xb774a000
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\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) = 0xb7603000
mprotect(0xb7743000, 4096, PROT_NONE) = 0
mmap2(0xb7744000, 12288, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x140) = 0xb7744000
mmap2(0xb7747000, 10600, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0xb7747000
close(3) = 0
mmap2(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0xb7602000
set_thread_area({entry_number:-1 -> 6, base_addr:0xb76026c0, limit:1048575, seg_32bit:1, contents:0, read_exec_only:0, limit_in_pages:1, seg_not_prese
nt:0, useable:1}) = 0
mprotect(0xb7744000, 8192, PROT_READ) = 0
mprotect(0xb7778000, 4096, PROT_READ) = 0
munmap(0xb774a000, 64828) = 0
brk(0) = 0x8849000
brk(0x886a000) = 0x886a000
open("2b1.txt", O_RDONLY) = 3
open("2b2.txt", O_WRONLY|O_CREAT|O_TRUNC, 0666) = 4
fstat64(3, {st_mode=S_IFREG|0644, st_size=8, ...}) = 0
mmap2(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0xb7759000
read(3, "PRIMERO\n", 4096) = 8
fstat64(4, {st_mode=S_IFREG|0644, st_size=0, ...}) = 0
mmap2(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0xb7758000
read(3, "", 4096) = 0
close(3) = 0
munmap(0xb7759000, 4096) = 0
write(4, "PRIMERO\n", 8) = 8
close(4) = 0
munmap(0xb7758000, 4096) = 0
exit_group(0) = ?
os@debian:~/Documents$
os@debian: ~/Docum...

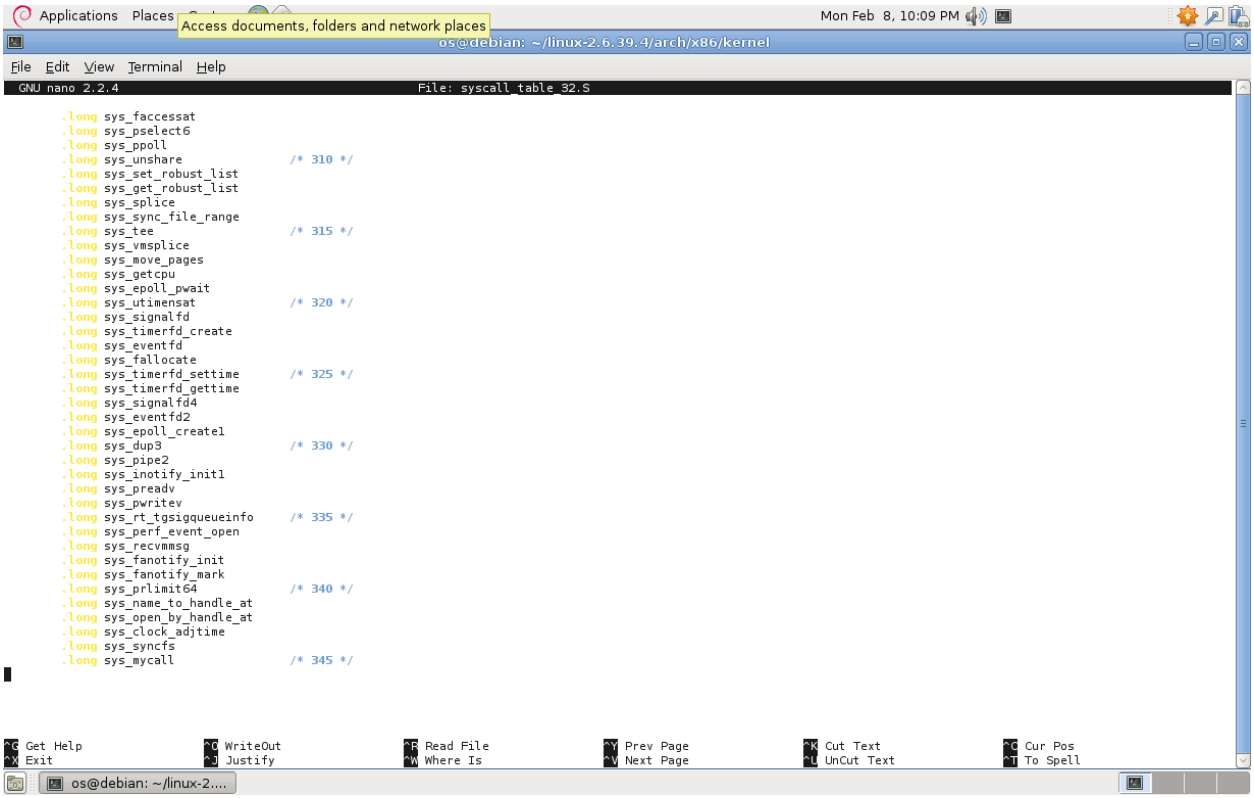
a) La primera llamada que aparece es execve porque esta es la que ejecuta nuestro programa.
b) Los resultados que están después de “=” son referencias a memoria.
c) Porque al momento de llegar al final de documento, hace el read y no obtiene nada, lo que significa que se llegó al final del documento.
d) munmap(0xb7758000, 4096) remueve las referencias a páginas de memoria.
mmap2(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0xb7759000, crea una nueva referencia en virtual address space del proceso llamado.
open("/etc/ld.so.cache", O_RDONLY) = 3, abre una lista ordenada de librerías encontradas en los directorios especificados en /etc/ld/so/conf.

Ejercicio 3

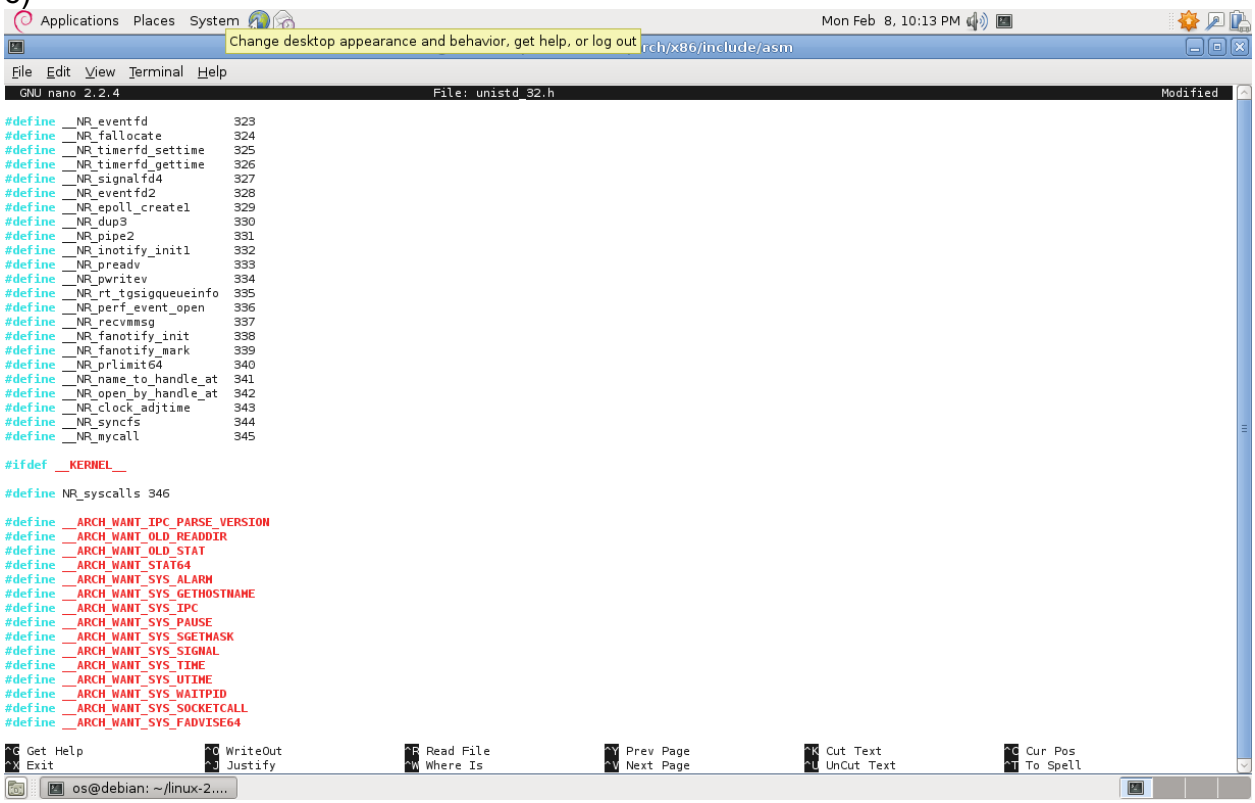
a)



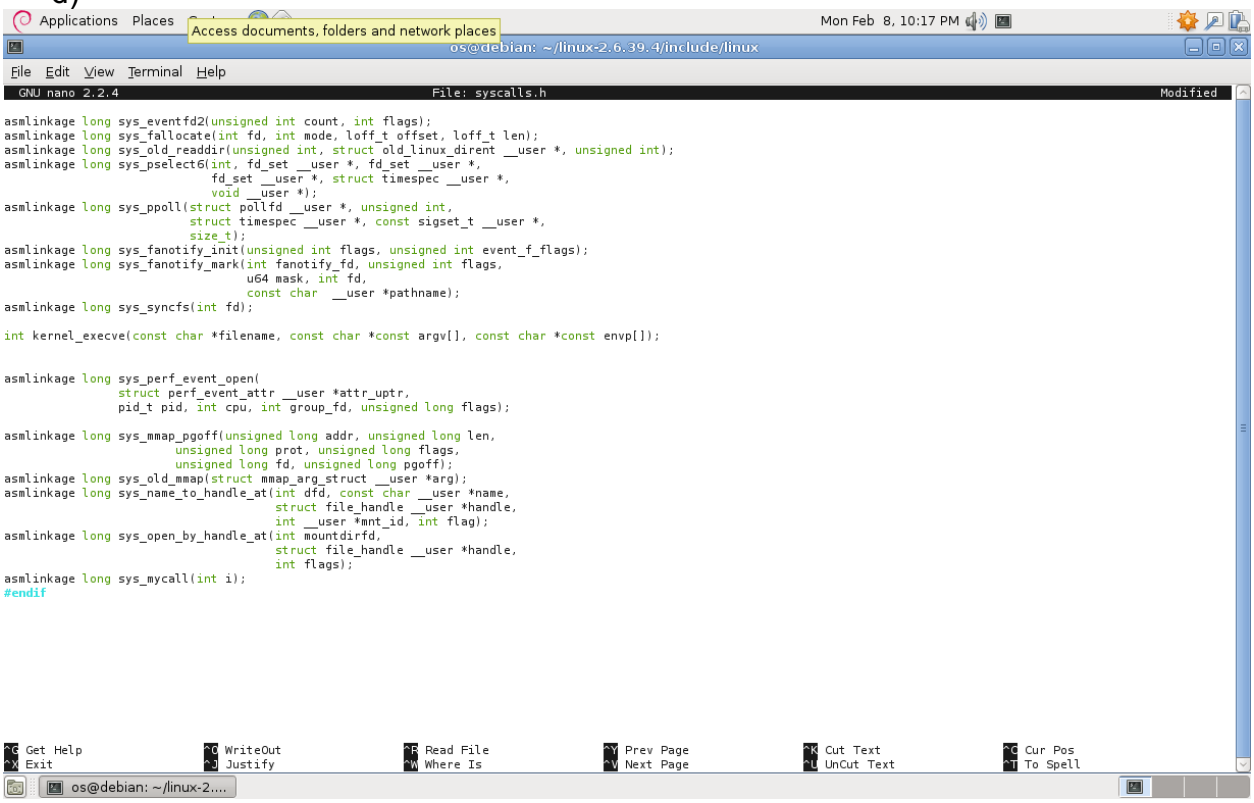
b)


Applications Places
Access documents, folders and network places
Mon Feb 8, 10:09 PM
os@debian: ~/linux-2.6.39.4/arch/x86/kernel
File Edit View Terminal Help
GNU nano 2.2.4 File: syscall_table_32.S
.long sys_faccessat
.long sys_pselect6
.long sys_ppoll
.long sys_unshare /* 310 */
.long sys_set_robust_list
.long sys_get_robust_list
.long sys_splice
.long sys_sync_file_range
.long sys_tee /* 315 */
.long sys_vmsplice
.long sys_move_pages
.long sys_getcpu
.long sys_epoll_pwait
.long sys_utimensat /* 320 */
.long sys_signalfd
.long sys_timerfd_create
.long sys_eventfd
.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 */
^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
os@debian: ~/linux-2....

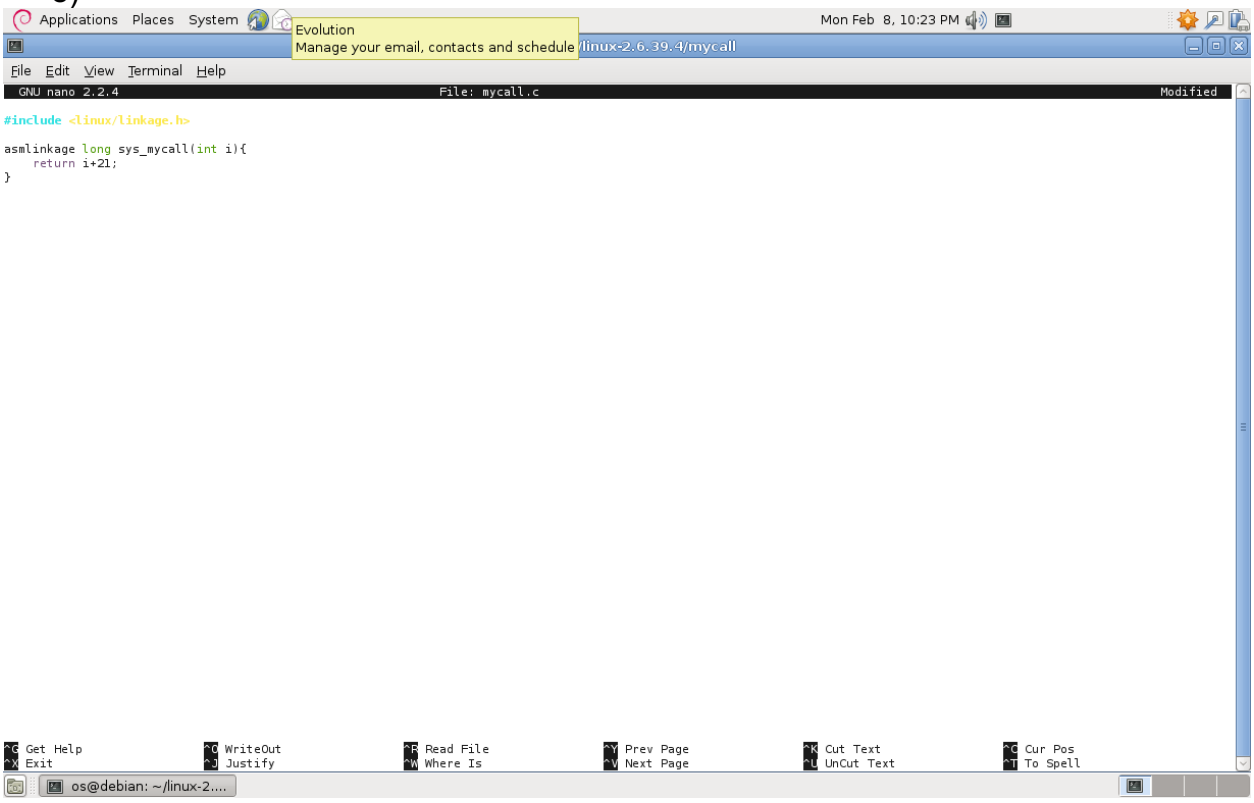
c)

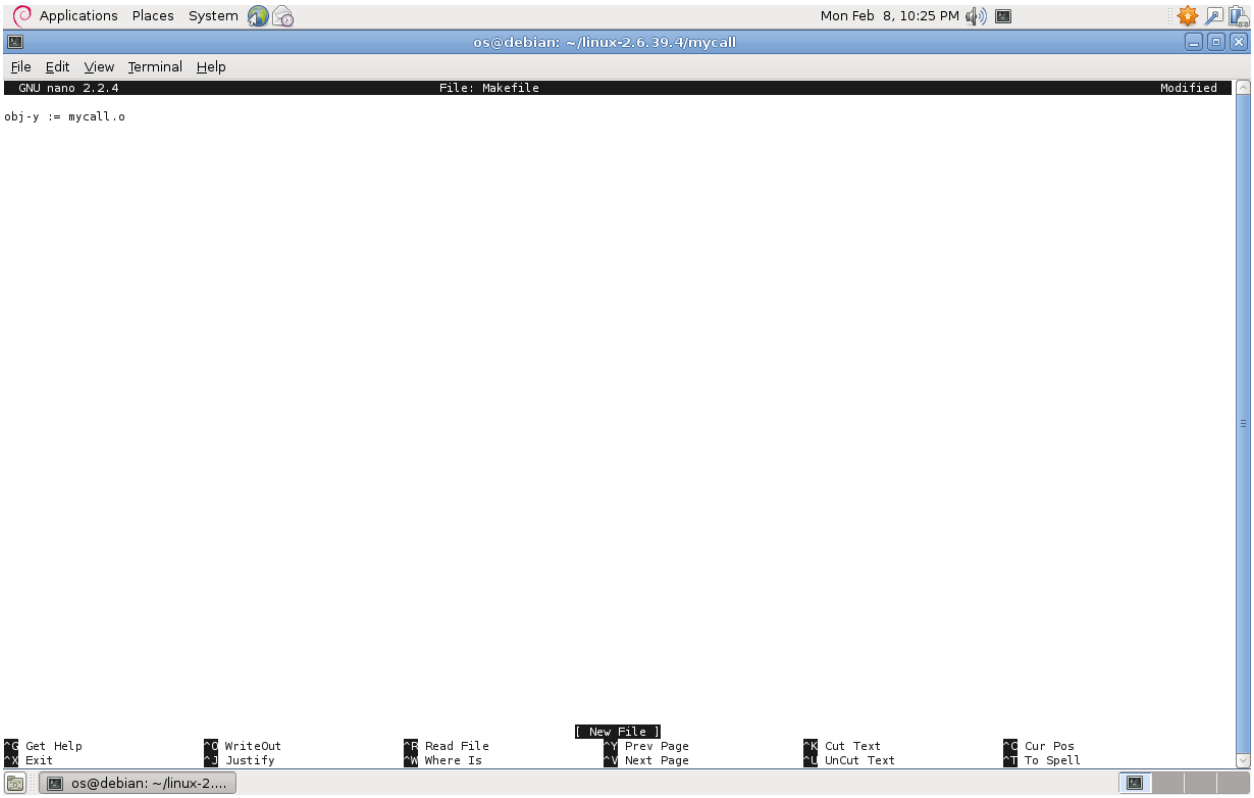

Applications Places System
Change desktop appearance and behavior, get help, or log out
Mon Feb 8, 10:13 PM
rch/x86/include/asm
File Edit View Terminal Help
GNU nano 2.2.4 File: unistd_32.h Modified
#define __NR_eventfd 323
#define __NR_fallocate 324
#define __NR_timerfd_settime 325
#define __NR_timerfd_gettime 326
#define __NR_signalfd4 327
#define __NR_eventfd2 328
#define __NR_epoll_create1 329
#define __NR_dup3 330
#define __NR_pipe2 331
#define __NR_inotify_init1 332
#define __NR_preadv 333
#define __NR_pwritev 334
#define __NR_rt_tgsigqueueinfo 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
#define __ARCH_WANT_SYS_ALARM
#define __ARCH_WANT_SYS_GETHOSTNAME
#define __ARCH_WANT_SYS_IPC
#define __ARCH_WANT_SYS_PAUSE
#define __ARCH_WANT_SYS_SGETMASK
#define __ARCH_WANT_SYS_SIGNAL
#define __ARCH_WANT_SYS_TIME
#define __ARCH_WANT_SYS_UTIME
#define __ARCH_WANT_SYS_WAITPID
#define __ARCH_WANT_SYS_SOCKETCALL
#define __ARCH_WANT_SYS_FADVISE64
^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
os@debian: ~/linux-2....

d)

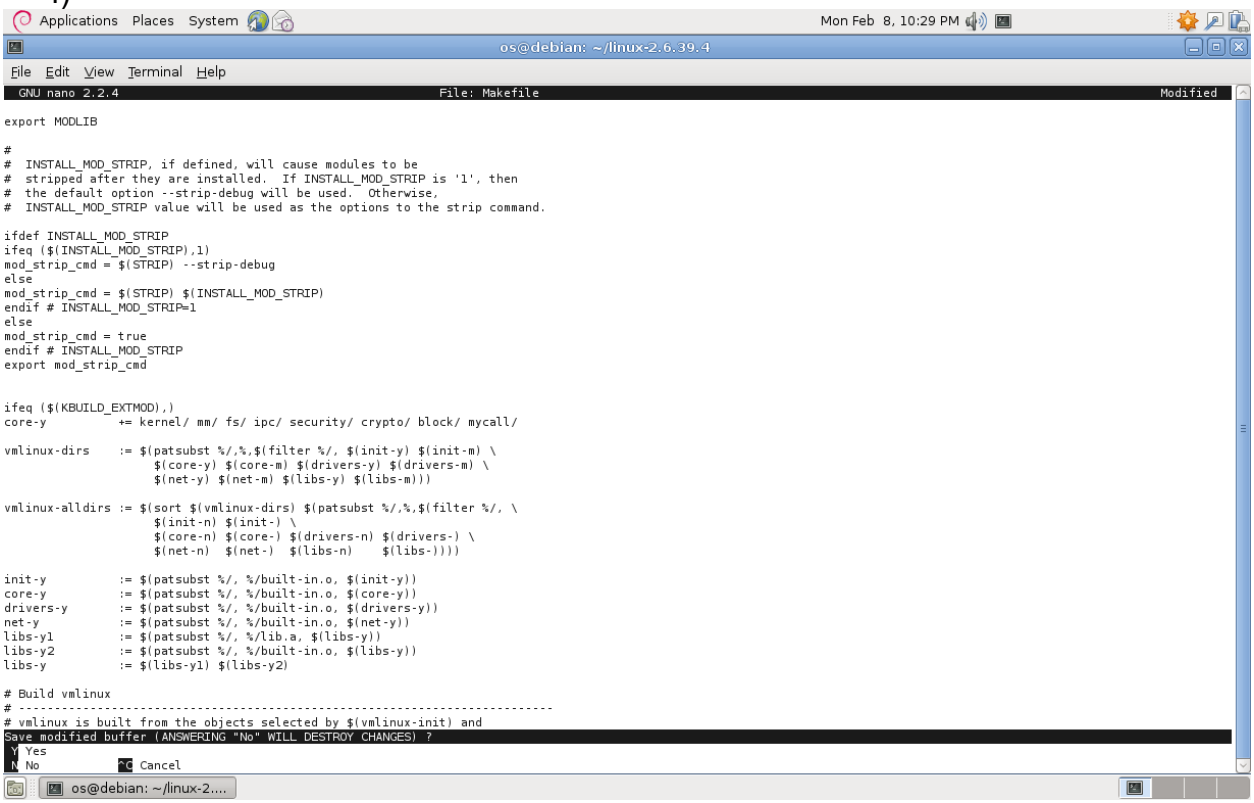

Applications Places
Access documents, folders and network places
Mon Feb 8, 10:17 PM
os@debian: ~/linux-2.6.39.4/include/linux
File Edit View Terminal Help
GNU nano 2.2.4 File: syscalls.h Modified
asmlinkage long sys_eventfd2(unsigned int count, int flags);
asmlinkage long sys_fallocate(int fd, int mode, loff_t offset, loff_t len);
asmlinkage long sys_old_readdir(unsigned int, struct old_linux_dirent __user *, unsigned int);
asmlinkage long sys_pselect6(int, fd_set __user *, fd_set __user *,
fd_set __user *, struct timespec __user *,
void __user *);
asmlinkage long sys_ppoll(struct pollfd __user *, unsigned int,
struct timespec __user *, const sigset_t __user *,
size_t);
asmlinkage long sys_fanotify_init(unsigned int flags, unsigned int event_f_flags);
asmlinkage long sys_fanotify_mark(int fanotify_fd, unsigned int flags,
u64 mask, int fd,
const char __user *pathname);
asmlinkage long sys_syncfs(int fd);
int kernel_execve(const char *filename, const char *const argv[], const char *const envp[]);
asmlinkage long sys_perf_event_open(
struct perf_event_attr __user *attr_uptr,
pid_t pid, int cpu, int group_fd, unsigned long flags);
asmlinkage long sys_mmap_pgoff(unsigned long addr, unsigned long len,
unsigned long prot, unsigned long flags,
unsigned long fd, unsigned long pgoff);
asmlinkage long sys_old_mmap(struct mmap_arg_struct __user *arg);
asmlinkage long sys_name_to_handle_at(int dfd, const char __user *name,
struct file_handle __user *handle,
int __user *mnt_id, int flag);
asmlinkage long sys_open_by_handle_at(int mountdirfd,
struct file_handle __user *handle,
int flags);
asmlinkage long sys_mycall(int i);
#endif
^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
os@debian: ~/linux-2....

e)

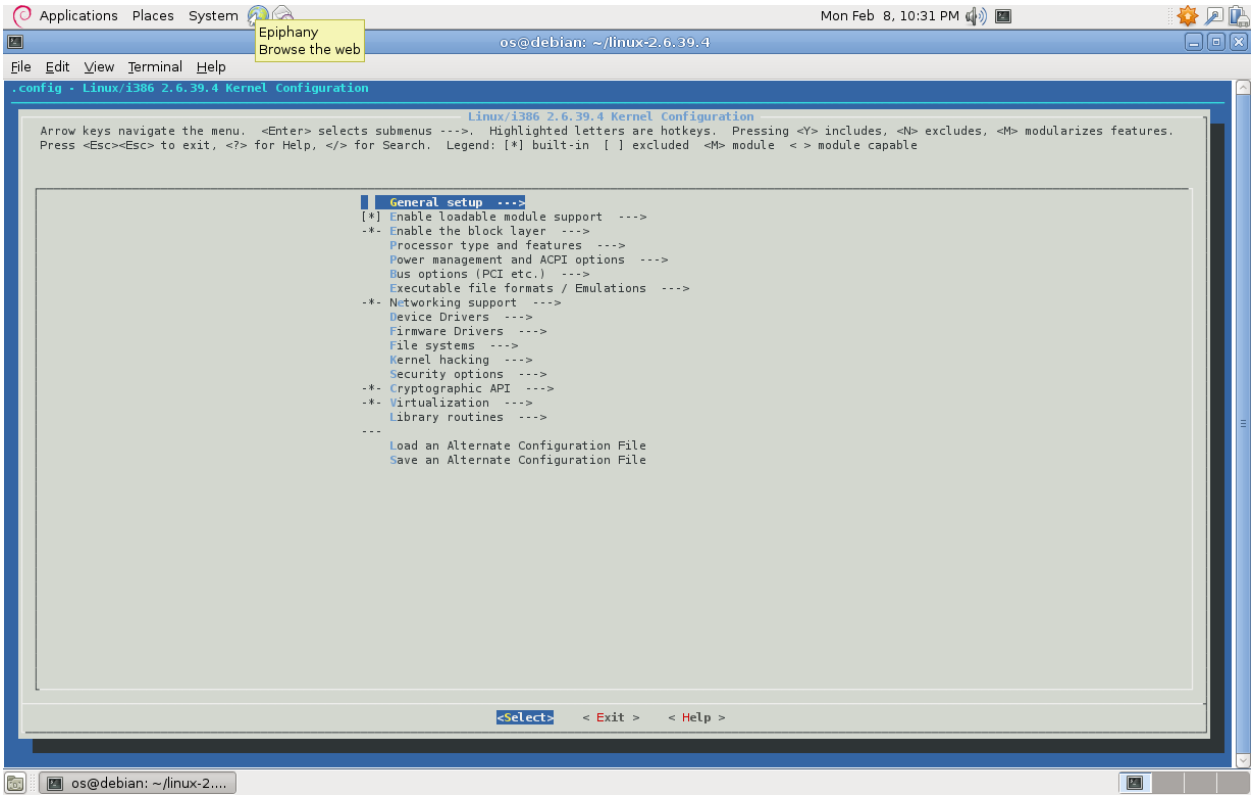

Applications Places System
Evolution
Manage your email, contacts and schedule
Mon Feb 8, 10:23 PM
linux-2.6.39.4/mycall
File Edit View Terminal Help
GNU nano 2.2.4 File: mycall.c Modified
#include <linux/linkage.h>
asmlinkage long sys_mycall(int i){
return i+21;
}
^G Get Help ^O WriteOut ^R Read File ^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
os@debian: ~/linux-2....


Applications Places System
Mon Feb 8, 10:25 PM
os@debian: ~/linux-2.6.39.4/mycall
File Edit View Terminal Help
GNU nano 2.2.4 File: Makefile Modified
obj-y := mycall.o
[New File]
^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
os@debian: ~/linux-2....

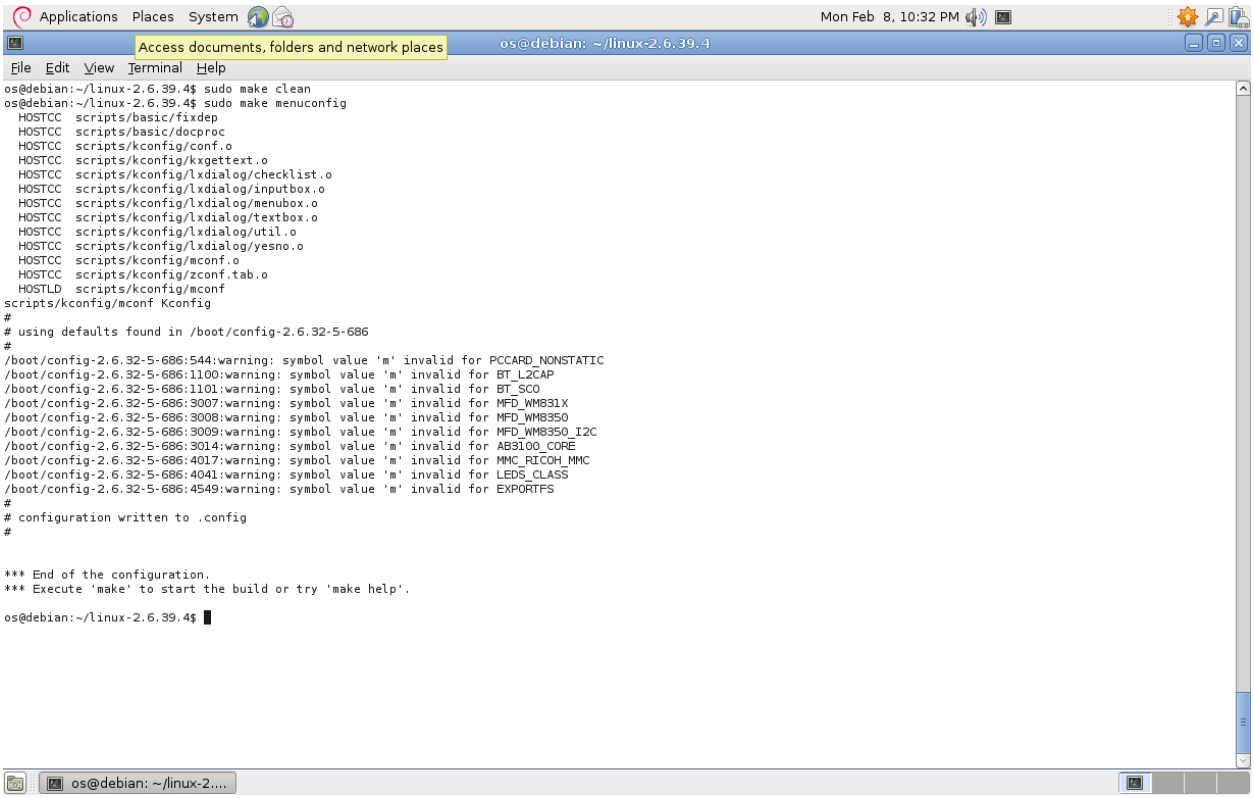
f)

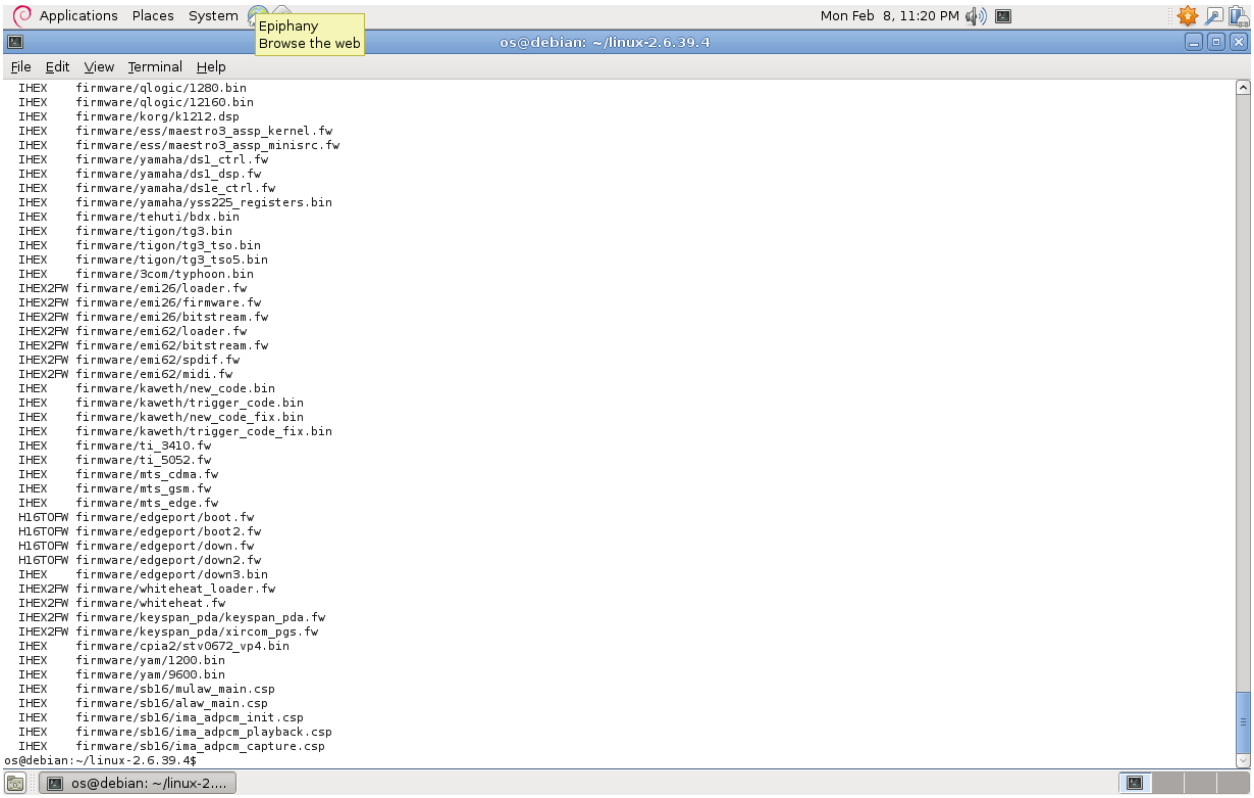

Applications Places System
Mon Feb 8, 10:29 PM
os@debian: ~/linux-2.6.39.4
File Edit View Terminal Help
GNU nano 2.2.4 File: Makefile Modified
export MODLIB
#
INSTALL_MOD_STRIP, if defined, will cause modules to be
stripped after they are installed. If INSTALL_MOD_STRIP is '1', then
the default option --strip-debug will be used. Otherwise,
INSTALL_MOD_STRIP value will be used as the options to the strip command.
ifdef INSTALL_MOD_STRIP
ifeq ($(INSTALL_MOD_STRIP),1)
mod_strip_cmd = $(STRIP) --strip-debug
else
mod_strip_cmd = $(STRIP) $(INSTALL_MOD_STRIP)
endif # INSTALL_MOD_STRIP=1
else
mod_strip_cmd = true
endif # INSTALL_MOD_STRIP
export mod_strip_cmd
ifeq ($(KBUILD_EXTMOD),)
core-y += kernel/ mm/ fs/ ipc/ security/ crypto/ block/ mycall/
vmlinux-dirs := $(patsubst %/,%,$(filter %/, $(init-y) $(init-m) \
$(core-y) $(core-m) $(drivers-y) $(drivers-m) \
$(net-y) $(net-m) $(libs-y) $(libs-m)))
vmlinux-alldirs := $(sort $(vmlinux-dirs) $(patsubst %/,%,$(filter %/, \
$(init-n) $(init-) \
$(core-n) $(core-) $(drivers-n) $(drivers-) \
$(net-n) $(net-) $(libs-n) $(libs-))))
init-y := $(patsubst %/, %/built-in.o, $(init-y))
core-y := $(patsubst %/, %/built-in.o, $(core-y))
drivers-y := $(patsubst %/, %/built-in.o, $(drivers-y))
net-y := $(patsubst %/, %/built-in.o, $(net-y))
libs-y1 := $(patsubst %/, %/lib.a, $(libs-y))
libs-y2 := $(patsubst %/, %/built-in.o, $(libs-y))
libs-y := $(libs-y1) $(libs-y2)
Build vmlinux
vmlinux is built from the objects selected by $(vmlinux-init) and
Save modified buffer (ANSWERING "No" WILL DESTROY CHANGES) ?
Y Yes
N No ^C Cancel
os@debian: ~/linux-2....

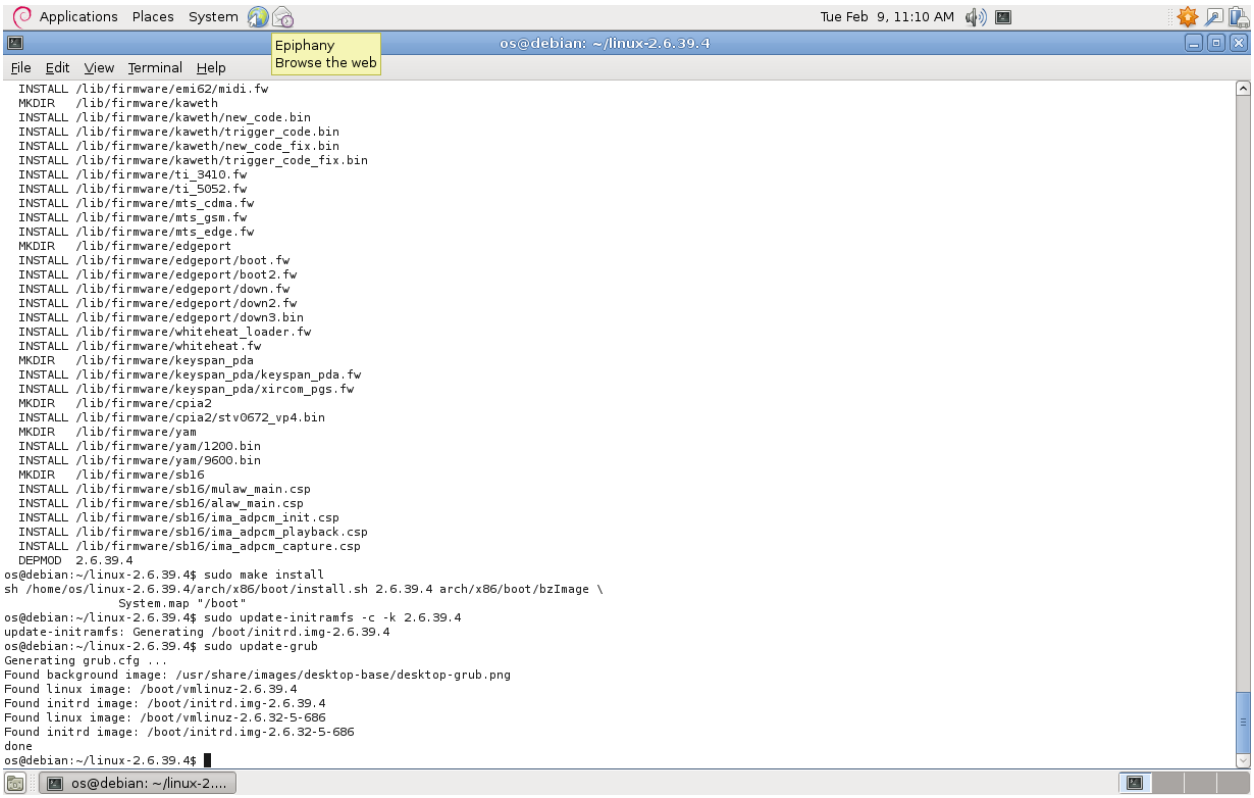
g)


Applications Places System
Mon Feb 8, 10:31 PM
Epiphany
Browse the web
os@debian: ~/linux-2.6.39.4
File Edit View Terminal Help
.config - Linux/i386 2.6.39.4 Kernel Configuration
Linux/i386 2.6.39.4 Kernel Configuration
Arrow keys navigate the menu. <Enter> selects submenus --->. Highlighted letters are hotkeys. Pressing <Y> includes, <N> excludes, <M> modularizes features.
Press <Esc><Esc> to exit, <?> for Help, </> for Search. Legend: [*] built-in [ ] excluded <M> module < > module capable
General setup --->
[*] Enable loadable module support --->
-*- Enable the block layer --->
Processor type and features --->
Power management and ACPI options --->
Bus options (PCI etc.) --->
Executable file formats / Emulations --->
-*- Networking support --->
Device Drivers --->
Firmware Drivers --->
File systems --->
Kernel hacking --->
Security options --->
-*- Cryptographic API --->
-*- Virtualization --->
Library routines --->

Load an Alternate Configuration File
Save an Alternate Configuration File
<Select> < Exit > < Help >
os@debian: ~/linux-2....

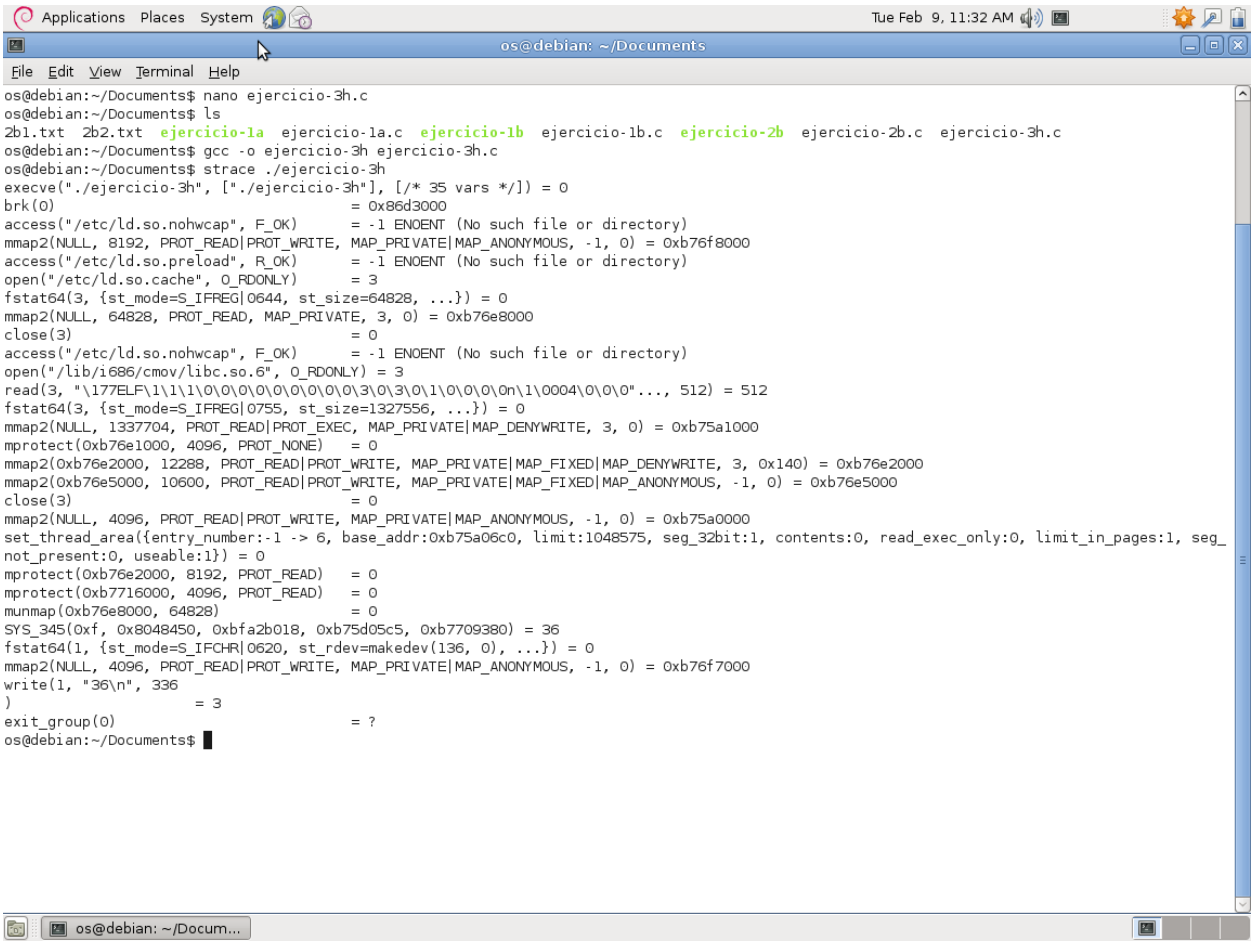

Applications Places System
Mon Feb 8, 10:32 PM
Access documents, folders and network places
os@debian: ~/linux-2.6.39.4
File Edit View Terminal Help
os@debian:~/linux-2.6.39.4$ sudo make clean
os@debian:~/linux-2.6.39.4$ sudo make menuconfig
HOSTCC scripts/basic/fixdep
HOSTCC scripts/basic/docproc
HOSTCC scripts/kconfig/conf.o
HOSTCC scripts/kconfig/kxgettext.o
HOSTCC scripts/kconfig/lxdialog/checklist.o
HOSTCC scripts/kconfig/lxdialog/inputbox.o
HOSTCC scripts/kconfig/lxdialog/menubox.o
HOSTCC scripts/kconfig/lxdialog/textbox.o
HOSTCC scripts/kconfig/lxdialog/util.o
HOSTCC scripts/kconfig/lxdialog/yesno.o
HOSTCC scripts/kconfig/mconf.o
HOSTCC scripts/kconfig/zconf.tab.o
HOSTLD scripts/kconfig/mconf
scripts/kconfig/mconf Kconfig
#
using defaults found in /boot/config-2.6.32-5-686
#
/boot/config-2.6.32-5-686:544:warning: symbol value 'm' invalid for PCCARD_NONSTATIC
/boot/config-2.6.32-5-686:1100:warning: symbol value 'm' invalid for BT_L2CAP
/boot/config-2.6.32-5-686:1101:warning: symbol value 'm' invalid for BT_SCO
/boot/config-2.6.32-5-686:3007:warning: symbol value 'm' invalid for MFD_WM831X
/boot/config-2.6.32-5-686:3008:warning: symbol value 'm' invalid for MFD_WM8350
/boot/config-2.6.32-5-686:3009:warning: symbol value 'm' invalid for MFD_WM8350_I2C
/boot/config-2.6.32-5-686:3014:warning: symbol value 'm' invalid for AB3100_CORE
/boot/config-2.6.32-5-686:4017:warning: symbol value 'm' invalid for MMC_RICOH_MMC
/boot/config-2.6.32-5-686:4041:warning: symbol value 'm' invalid for LEDS_CLASS
/boot/config-2.6.32-5-686:4549:warning: symbol value 'm' invalid for EXPORTFS
#
configuration written to .config
#
*** End of the configuration.
*** Execute 'make' to start the build or try 'make help'.
os@debian:~/linux-2.6.39.4$
os@debian: ~/linux-2....


Applications Places System
Epiphany
Browse the web
Mon Feb 8, 11:20 PM
os@debian: ~/linux-2.6.39.4
File Edit View Terminal Help
IHEX firmware/qlogic/1280.bin
IHEX firmware/qlogic/12160.bin
IHEX firmware/korg/k1212.dsp
IHEX firmware/ess/maestro3_assp_kernel.fw
IHEX firmware/ess/maestro3_assp_minisrc.fw
IHEX firmware/yamaha/ds1_ctrl.fw
IHEX firmware/yamaha/ds1_dsp.fw
IHEX firmware/yamaha/ds1e_ctrl.fw
IHEX firmware/yamaha/yss225_registers.bin
IHEX firmware/tehuti/bdx.bin
IHEX firmware/tigon/tg3.bin
IHEX firmware/tigon/tg3_tso.bin
IHEX firmware/tigon/tg3_tso5.bin
IHEX firmware/3com/typhoon.bin
IHEX2FW firmware/emi26/loader.fw
IHEX2FW firmware/emi26/firmware.fw
IHEX2FW firmware/emi26/bitstream.fw
IHEX2FW firmware/emi62/loader.fw
IHEX2FW firmware/emi62/bitstream.fw
IHEX2FW firmware/emi62/spdif.fw
IHEX2FW firmware/emi62/midi.fw
IHEX firmware/kaweth/new_code.bin
IHEX firmware/kaweth/trigger_code.bin
IHEX firmware/kaweth/new_code_fix.bin
IHEX firmware/kaweth/trigger_code_fix.bin
IHEX firmware/ti_3410.fw
IHEX firmware/ti_5052.fw
IHEX firmware/mts_cdma.fw
IHEX firmware/mts_gsm.fw
IHEX firmware/mts_edge.fw
H16TOFW firmware/edgeport/boot.fw
H16TOFW firmware/edgeport/boot2.fw
H16TOFW firmware/edgeport/down.fw
H16TOFW firmware/edgeport/down2.fw
IHEX firmware/edgeport/down3.bin
IHEX2FW firmware/whiteheat_loader.fw
IHEX2FW firmware/whiteheat.fw
IHEX2FW firmware/keyspan_pda/keyspan_pda.fw
IHEX2FW firmware/keyspan_pda/xircom_pgs.fw
IHEX firmware/cpia2/stv0672_vp4.bin
IHEX firmware/yam/1200.bin
IHEX firmware/yam/9600.bin
IHEX firmware/sb16/mulaw_main.csp
IHEX firmware/sb16/alaw_main.csp
IHEX firmware/sb16/ima_adpcm_init.csp
IHEX firmware/sb16/ima_adpcm_playback.csp
IHEX firmware/sb16/ima_adpcm_capture.csp
os@debian:~/linux-2.6.39.4$
os@debian: ~/linux-2....

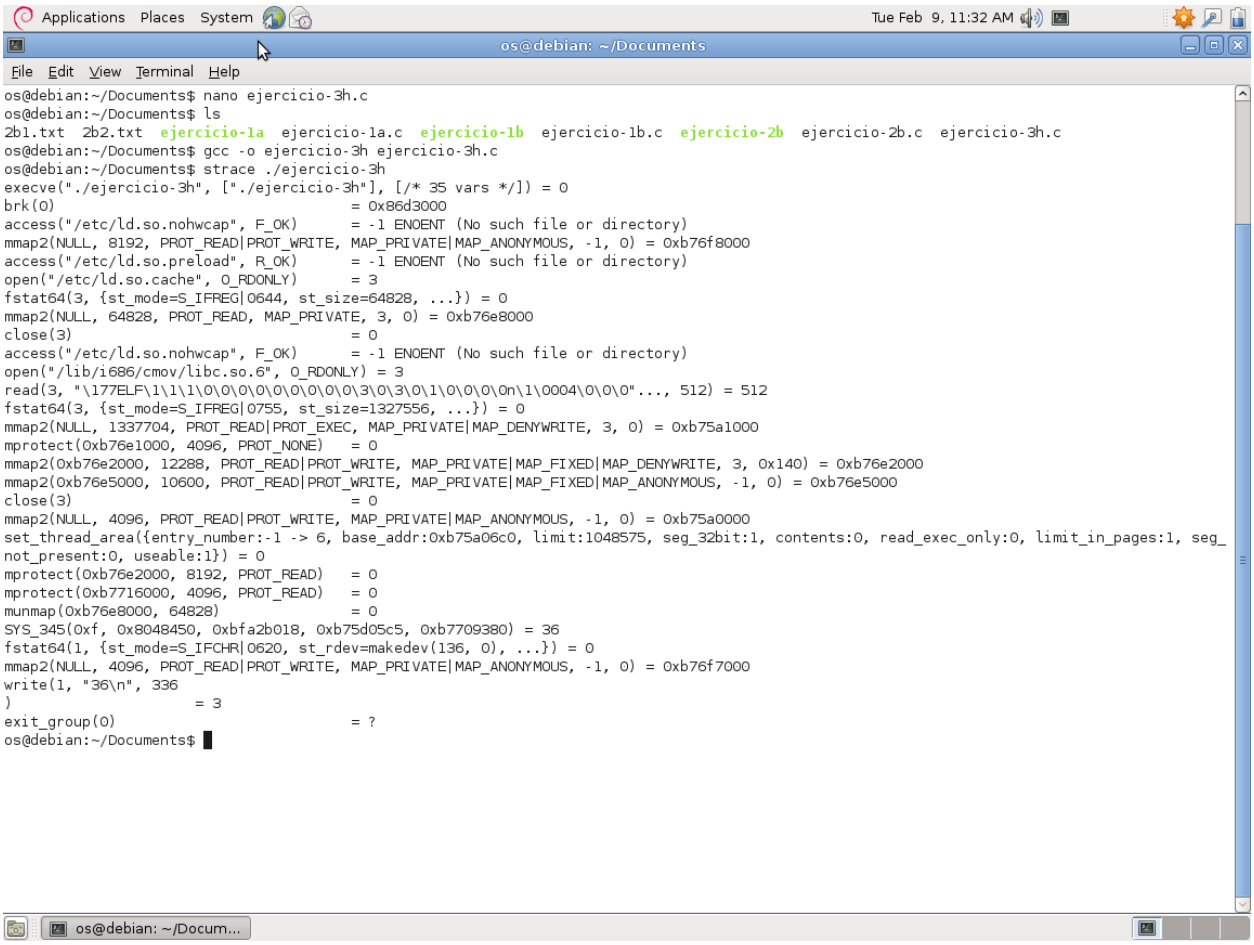

Applications Places System
Epiphany
Browse the web
Tue Feb 9, 11:10 AM
os@debian: ~/linux-2.6.39.4
File Edit View Terminal Help
INSTALL /lib/firmware/emi62/midi.fw
MKDIR /lib/firmware/kaweth
INSTALL /lib/firmware/kaweth/new_code.bin
INSTALL /lib/firmware/kaweth/trigger_code.bin
INSTALL /lib/firmware/kaweth/new_code_fix.bin
INSTALL /lib/firmware/kaweth/trigger_code_fix.bin
INSTALL /lib/firmware/ti_3410.fw
INSTALL /lib/firmware/ti_5052.fw
INSTALL /lib/firmware/mts_cdma.fw
INSTALL /lib/firmware/mts_gsm.fw
INSTALL /lib/firmware/mts_edge.fw
MKDIR /lib/firmware/edgeport
INSTALL /lib/firmware/edgeport/boot.fw
INSTALL /lib/firmware/edgeport/boot2.fw
INSTALL /lib/firmware/edgeport/down.fw
INSTALL /lib/firmware/edgeport/down2.fw
INSTALL /lib/firmware/edgeport/down3.bin
INSTALL /lib/firmware/whiteheat_loader.fw
INSTALL /lib/firmware/whiteheat.fw
MKDIR /lib/firmware/keyspan_pda
INSTALL /lib/firmware/keyspan_pda/keyspan_pda.fw
INSTALL /lib/firmware/keyspan_pda/xircom_pgs.fw
MKDIR /lib/firmware/cpia2
INSTALL /lib/firmware/cpia2/stv0672_vp4.bin
MKDIR /lib/firmware/yam
INSTALL /lib/firmware/yam/1200.bin
INSTALL /lib/firmware/yam/9600.bin
MKDIR /lib/firmware/sb16
INSTALL /lib/firmware/sb16/mulaw_main.csp
INSTALL /lib/firmware/sb16/alaw_main.csp
INSTALL /lib/firmware/sb16/ima_adpcm_init.csp
INSTALL /lib/firmware/sb16/ima_adpcm_playback.csp
INSTALL /lib/firmware/sb16/ima_adpcm_capture.csp
DEPMOD 2.6.39.4
os@debian:~/linux-2.6.39.4$ sudo make install
sh /home/os/linux-2.6.39.4/arch/x86/boot/install.sh 2.6.39.4 arch/x86/boot/bzImage \
System.map "/boot"
os@debian:~/linux-2.6.39.4$ sudo update-initramfs -c -k 2.6.39.4
update-initramfs: Generating /boot/initrd.img-2.6.39.4
os@debian:~/linux-2.6.39.4$ sudo update-grub
Generating grub.cfg ...
Found background image: /usr/share/images/desktop-base/desktop-grub.png
Found linux image: /boot/vmlinuz-2.6.39.4
Found initrd image: /boot/initrd.img-2.6.39.4
Found linux image: /boot/vmlinuz-2.6.32-5-686
Found initrd image: /boot/initrd.img-2.6.32-5-686
done
os@debian:~/linux-2.6.39.4$
os@debian: ~/linux-2....

h)


GNU GRUB version 1.98+20100804-14+squeeze1
Debian GNU/Linux, with Linux 2.6.39.4
Debian GNU/Linux, with Linux 2.6.39.4 (recovery mode)
Debian GNU/Linux, with Linux 2.6.32-5-686
Debian GNU/Linux, with Linux 2.6.32-5-686 (recovery mode)
Use the ↑ and ↓ keys to select which entry is highlighted.
Press enter to boot the selected OS, 'e' to edit the commands
before booting or 'c' for a command-line.
debian
The Universal Operating System


Applications Places System
Tue Feb 9, 11:32 AM
os@debian: ~/Documents
File Edit View Terminal Help
os@debian:~/Documents$ nano ejercicio-3h.c
os@debian:~/Documents$ ls
2b1.txt 2b2.txt ejercicio-1a ejercicio-1a.c ejercicio-1b ejercicio-1b.c ejercicio-2b ejercicio-2b.c ejercicio-3h.c
os@debian:~/Documents$ gcc -o ejercicio-3h ejercicio-3h.c
os@debian:~/Documents$ strace ./ejercicio-3h
execve("./ejercicio-3h", ["./ejercicio-3h"], [/* 35 vars */]) = 0
brk(0) = 0x86d3000
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) = 0xb76f8000
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) = 0xb76e8000
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\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) = 0xb75a1000
mprotect(0xb76e1000, 4096, PROT_NONE) = 0
mmap2(0xb76e2000, 12288, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x140) = 0xb76e2000
mmap2(0xb76e5000, 10600, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0xb76e5000
close(3) = 0
mmap2(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0xb75a0000
set_thread_area({entry_number:-1 -> 6, base_addr:0xb75a06c0, limit:1048575, seg_32bit:1, contents:0, read_exec_only:0, limit_in_pages:1, seg_
not_present:0, useable:1}) = 0
mprotect(0xb76e2000, 8192, PROT_READ) = 0
mprotect(0xb7716000, 4096, PROT_READ) = 0
munmap(0xb76e8000, 64828) = 0
SYS_345(0xf, 0x8048450, 0xbfa2b018, 0xb75d05c5, 0xb7709380) = 36
fstat64(1, {st_mode=S_IFCHR|0620, st_rdev=makedev(136, 0), ...}) = 0
mmap2(NULL, 4096, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0xb76f7000
write(1, "36\n", 336
) = 3
exit_group(0) = ?
os@debian:~/Documents$
os@debian: ~/Docum...


GNU GRUB version 1.98+20100804-14+squeeze1
Debian GNU/Linux, with Linux 2.6.39.4
Debian GNU/Linux, with Linux 2.6.39.4 (recovery mode)
Debian GNU/Linux, with Linux 2.6.32-5-686
Debian GNU/Linux, with Linux 2.6.32-5-686 (recovery mode)
Use the ↑ and ↓ keys to select which entry is highlighted.
Press enter to boot the selected OS, 'e' to edit the commands
before booting or 'c' for a command-line.
debian
The Universal Operating System



a) Se ha modificado la interfaz de llamadas, puesto que ahorita existe una llamada a sistema más y el API realmente sigue igual puesto que permite acceder al kernel.
b) Porque la definimos por un número y no por un nombre. Para poder usarla con nombre, se debería de envolver la llamada de sistema en una librería.
c) Porque realmente estas son funciones que envuelven las llamadas a sistema. Estas funciones vienen incluídas en las librerías estándar.