





hello.c x

```
1 #include <linux/kernel.h>
2
3 asmlinkage long sys_hello(void) {
4     printk("Hello, World ! MnC-IDD-21124015 !\n");
5     return 0;
6 }
7
```

Makefile x

```
1 obj-y := hello.o
2
```



Makefile x

```
mod_sign_cmd = scripts/sign-file $(CONFIG_MODULE_SIG_HASH)
$(MODULE_SIG_KEY_SRCPREFIX)$(CONFIG_MODULE_SIG_KEY) certs/
signing_key.x509
```

```
else
```

```
mod_sign_cmd = true
```

```
endif
```

```
export mod_sign_cmd
```

```
ifeq ($(KBUILD_EXTMOD),)
```

```
core-y += kernel/ certs/ mm/ fs/ ipc/ security/ crypto/
block/ hello/
```

```
vmlinux-dirs := $(patsubst %/,%, $(filter %/, $(init-y) $(init-
m) \
$(core-y) $(core-m) $(drivers-y) $(drivers-
m) \
$(net-y) $(net-m) $(libs-y) $(libs-m) $(virt-
y)))
```

```
vmlinux-alldirs := $(sort $(vmlinux-dirs) $(patsubst %/,%, $(filter
```





syscall_64.tbl

```

353 525 x32 sigaltstack      compat_sys_sigaltstack
354 526 x32 timer_create    compat_sys_timer_create
355 527 x32 mq_notify        compat_sys_mq_notify
356 528 x32 kexec_load       compat_sys_kexec_load
357 529 x32 waitid            compat_sys_waitid
358 530 x32 set_robust_list   compat_sys_set_robust_list
359 531 x32 get_robust_list   compat_sys_get_robust_list
360 532 x32 vmsplice          compat_sys_vmsplice
361 533 x32 move_pages        compat_sys_move_pages
362 534 x32 preadv            compat_sys_preadv64
363 535 x32 pwritev           compat_sys_pwritev64
364 536 x32 rt_tgsigqueueinfo compat_sys_rt_tgsigqueueinfo
365 537 x32 recvmmsg          compat_sys_recvmmsg
366 538 x32 sendmmsg          compat_sys_sendmmsg
367 539 x32 process_vm_readv  compat_sys_process_vm_readv
368 540 x32 process_vm_writev compat_sys_process_vm_writev
369 541 x32 setsockopt         compat_sys_setsockopt
370 542 x32 getsockopt         compat_sys_getsockopt
371 543 x32 io_setup          compat_sys_io_setup
372 544 x32 io_submit         compat_sys_io_submit
373 545 x32 execveat          stub_x32_execveat
374 546 64 hello             sys_hello
375

```





syscalls.h

```
872         unsigned long riovcnt,  
873         unsigned long flags);  
874  
875 asmlinkage long sys_kcmp(pid_t pid1, pid_t pid2, int type,  
876         unsigned long idx1, unsigned long idx2);  
877 asmlinkage long sys_finit_module(int fd, const char __user  
878 asmlinkage long sys_seccomp(unsigned int op, unsigned int  
879         const char __user *uargs);  
880 asmlinkage long sys_getrandom(char __user *buf, size_t co  
881         unsigned int flags);  
882 asmlinkage long sys_bpf(int cmd, union bpf_attr *attr, un  
883  
884 asmlinkage long sys_execveat(int dfd, const char __user *  
885         const char __user *const __user *argv,  
886         const char __user *const __user *envp, int fl  
887  
888 asmlinkage long sys_membarrier(int cmd, int flags);  
889  
890 asmlinkage long sys_mlock2(unsigned long start, size_t le  
891  
892 asmlinkage long sys_hello(void);  
893  
894 #endif  
895
```

root@beastcave: ~/Downloads/linux-4.4.148

9:20 PM

root@beastcave:~# cat /lib/modules/\$(uname -r)/build/.config > ~/Downloads/linux-4.4.148/.config

root@beastcave:~# cd ~/Downloads/linux-4.4.148/

root@beastcave:~/Downloads/linux-4.4.148# gedit .config

(gedit:2945): Gtk-WARNING **: Calling Inhibit failed: GDBus.Error: org.freedesktop.DBus.Error.ServiceUnknown: The name org.gnome.SessionManager was not provided by any .service files

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^C

root@beastcave:~/Downloads/linux-4.4.148#

run:

sudo make oldconfig

sudo make localmodconfig

sudo make -j4

sudo make modules_install install

sudo reboot

.config x

```
CONFIG_BLK_DEV_INITRD=y
CONFIG_INITRAMFS_SOURCE=""
CONFIG_RD_GZIP=y
CONFIG_RD_BZIP2=y
CONFIG_RD_LZMA=y
CONFIG_RD_XZ=y
CONFIG_RD_LZO=y
CONFIG_RD_LZ4=y
# CONFIG_CC_OPTIMIZE_FOR_PERFORMANCE=y
CONFIG_CC_OPTIMIZE_FOR_SIZE=y
CONFIG_SYSCTL=y
CONFIG_ANON_INODES=y
CONFIG_HAVE_UID16=y
CONFIG_SYSCTL_EXCEPTION_TRACE=y
CONFIG_HAVE_PCSPKR_PLATFORM=y
CONFIG_BPF=y
CONFIG_EXPERT=y
CONFIG_UID16=y
CONFIG_MULTIUSER=y
CONFIG_SGETMASK_SYSCALL=y
```



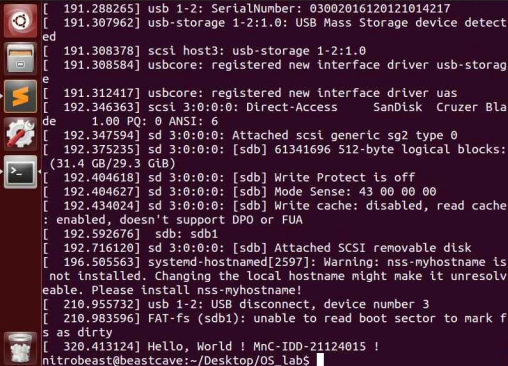
```
3_test.c x
1  #include <stdio.h>
2  #include <linux/kernel.h>
3  #include <sys/syscall.h>
4  #include <unistd.h>
5
6  int main()    {
7      long int status = syscall(546);
8      printf("System call sys_hello returned %ld\n",
9             status);
10     return 0;
11 }
```


System call sys_hello returned 0
nitroblast@beastcave:~/Desktop/OS_lab\$ uname -r
4.4.148
nitroblast@beastcave:~/Desktop/OS_lab\$ dmesg

kernel upgraded from

4.4.142-generic to 4.4.148

Ubuntu 14.0.4



```
[ 191.288265] usb 1-2: SerialNumber: 03002016120121014217
[ 191.307962] usb-storage 1-2:1.0: USB Mass Storage device detected
[ 191.308378] scsi host3: usb-storage 1-2:1.0
[ 191.308584] usbcore: registered new interface driver usb-storage
[ 191.312417] usbcore: registered new interface driver uas
[ 192.346363] scsi 3:0:0:0: Direct-Access     SanDisk  Cruzer Bla
de      1.00 PQ: 0 ANSI: 6
[ 192.347594] sd 3:0:0:0: Attached scsi generic sg2 type 0
[ 192.375235] sd 3:0:0:0: [sdb] 61341696 512-byte logical blocks:
(31.4 GB/29.3 GiB)
[ 192.404618] sd 3:0:0:0: [sdb] Write Protect is off
[ 192.404627] sd 3:0:0:0: [sdb] Mode Sense: 43 00 00 00
[ 192.434024] sd 3:0:0:0: [sdb] Write cache: disabled, read cache
: enabled, doesn't support DPO or FUA
[ 192.592676]   sdb: sdb1
[ 192.716120] sd 3:0:0:0: [sdb] Attached SCSI removable disk
[ 196.505563] systemd-hostnamed[2597]: Warning: nss-myhostname is
not installed. Changing the local hostname might make it unresolv
eable. Please install nss-myhostname!
[ 210.955732] usb 1-2: USB disconnect, device number 3
[ 210.983596] FAT-fs (sdb1): unable to read boot sector to mark f
s as dirty
[ 320.413124] Hello, World ! MnC-IDD-21124015 !
nitrobeat@beastcave:~/Desktop/OS_lab$
```