

# Laborator 2

## Module kernel

Sisteme de Operare2

2 martie 2010

Introducere

Linux

Windows

Keywords

- ▶ The cornerstone of ~~any nutritious breakfast~~ modern kernels
- ▶ built-in
- ▶ loadable
- ▶ .ko - Linux
- ▶ .sys - Windows

Introducere

**Linux**

Windows

Keywords

Headere

Informații despre modul

Entry point

Exit point

Specificare entry/exit points

```

1 #include <linux/kernel.h>
2 #include <linux/init.h>
3 #include <linux/module.h>
4
5 MODULE_DESCRIPTION("My kernel module");
6 MODULE_AUTHOR("Me");
7 MODULE_LICENSE("GPL");
8
9 static int dummy_init(void)
10 {
11     printk( KERN_DEBUG "Hi\n" );
12     return 0;
13 }
14
15 static void dummy_exit(void)
16 {
17     printk( KERN_DEBUG "Bye\n" );
18 }
19
20 module_init(dummy_init);
21 module_exit(dummy_exit);

```

## Makefile

```

1 KDIR=/lib/modules/`uname -r`/build
2
3 kbuild:
4     make -C $(KDIR) M=`pwd`
5
6 clean:
7     make -C $(KDIR) M=`pwd` clean

```

## Kbuild

```

1 EXTRA_CFLAGS=-g
2
3 obj-m      = modul.o

```

## listare module

```
# lsmod
```

## inserare modul

```
# insmod nume_modul.ko
```

## oprire modul

```
# rmmod nume_modul
```

## informații modul

```
# modinfo nume_modul
```

- ▶ printk
- ▶ objdump
- ▶ addr2line
- ▶ netconsole



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Keywords

Headere

Exit point

Entry point

```

1 #include <ntddk.h>
2
3 void DriverUnload(PDRIVER_OBJECT driver)
4 {
5     DbgPrint("driver unload");
6     return;
7 }
8
9 NTSTATUS DriverEntry(PDRIVER_OBJECT driver, PUNICODE_STRING registry)
10 {
11     DbgPrint("driver entry");
12     driver->DriverUnload = DriverUnload;
13     return STATUS_SUCCESS;
14 }

```

## Makefile

```

1 !ifdef NTMAKEENV
2 !include $(NTMAKEENV)\makefile.def
3 !else
4 DDK=C:\WinDDK\7600.16385.0
5 kbuild:
6     -del $(DDK)\build.dat
7     pushd . & $(DDK)\bin\setenv.bat $(DDK) chk wnet & @echo on & popd & build -cZ
8 !endif
  
```

## sources

```

1 TARGETNAME = modul
2 TARGETPATH = obj
3 TARGETTYPE = DRIVER
4
5 SOURCES = modul.c
  
```

listare module

```
# driver list
```

inserare modul

```
# driver load nume_modul.sys
```

oprire modul

```
# driver unload nume_modul
```

OSR Driver Loader

- ▶ DbgPrint
- ▶ MEMORY.DMP
- ▶ !analyze -v

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Keywords

- ▶ built-in module
- ▶ loadable module
- ▶ module\_init
- ▶ module\_exit
- ▶ Kbuild
- ▶ insmod,rmmod
- ▶ printk
- ▶ objdump
- ▶ addr2line
- ▶ netconsole
- ▶ DriverEntry
- ▶ driver load/unload
- ▶ DbgPrint
- ▶ MEMORY.DMP
- ▶ !analyze -v