Intel Pentium Architecture Monitoring. Linux Kernel Module Development Project.

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Abstract

Kernel Module in Linux operating system was developed.
The Module monitors system registers, tables and interrupt handling.

Project description

As any kernel module it runs in system privilege level (ring 0).
The two objectives of driver usage are:

1. The Module copies system register values (GDTR, LDTR, IDTR, TR, CRs, DRs, SRs), GDT, IDT, LDT, Page Directory and Page Table to user level buffer. The GUI program can access the buffer
2. The Module creates and loads its own Interrupt Descriptor Table to the CPU instead of the system one. The goal is to monitor and count the exception statistics.

Requirements

- Intel Pentium/Celeron I/MMX/II/III/IV based PC running Linux OS.
- Kernel 2.4 or above.
- Kernel headers installed.
- gcc 3.3 or above.
- gedit.

File List

my_ioctl_module.c	-	source file
makefile	-	makefile
view	-	GUI output script
my_ioctl_module_report.pdf	-	this document

Installation and Usage

1. Make sure you have reading rights on *my_ioctl_module.c* and on *makefile.*
2. Compile and link the module using:

make -C /usr/src/<linux headers directory>/ SUBDIRS=$PWD modules

3. Under root privileges run:

insmod my_ioctl_module.ko

4. Type: *./view*

Bibliografy

Alessandro Rubini, Jonathan Corbet, *Linux Device Drivers 2nd edition*, O'Reily 2003
Pentium Processor Family Developer's Manual, Intel 1997
Intel Architecture Software Developer's Manual, Intel 1999