

April 2, 2008
Operating Systems
LIACS
Assignment #5

Deadline: Tuesday, April 8, 2008

You are encouraged to work in teams of 2 persons.

Goal

The purpose of this exercise is twofold:

1. Create an environment in which you have the availability of Linux kernel source code and in which you can compile this source code and run the compiled version of the kernel.
2. Create the environment in such a way that you can fall back on the original kernel of your system.

(In the next assignment, we will write a Linux system call and invoke this system call with a user space program.)

Assignment

In the following a way to compile the kernel source code and run the compiled version of the kernel on your machine is described. Make sure you are superuser (root) when performing the operations listed below.

Step 1 - Preparation

Open up a shell, and `cd` into the kernel source code directory `/usr/src/`. In this directory, you will find a gzipped tar file, `linux-2.6.21.3.tar.gz`. This file originates from www.kernel.org. Extract the contents of this file using `tar -xvzf linux-2.6.21.3.tar.gz`

Adjust the `EXTRAVERSION` macro in the Makefile, such that you can recognize your own kernel.

Step 2 - Configuration

Copy the configuration file located in `/boot` to your kernel source directory (`/boot/config-2.6.21....`).

Enter your kernel source directory, and execute the following command:

```
make menuconfig
```

Choose "Load configuration from file" and enter the name of the config file you just copied. Using the menu interface, verify that `ext3` file system support is enabled.

Step 3 - Compiling

Now build the kernel and install it:

```
make  
make modules_install  
make install
```

This will take a while. Meanwhile, you can explore the kernel source directory.

Step 4 - Booting the kernel

Reboot your machine and select the new kernel in the boot menu.

Deliverables

Send an email to Sven van Haastregt (email: `svhaastr@liacs.nl`) and let the subject field of your email contain the string "OS Assignment 5". In the email, mention the name of the machine you used and the name of your compiled kernel as it appears in the boot menu.