CENG 536 KERNEL PROJECT GUIDE

- User Mode Linux is a binary executable that works in a Linux host and boots a virtual Linux within a user process. It's an isolated environment for making experiments on a kernel or a system. Its hardware architecture is a process in the host system (the system that you execute UML binary). For detailed information see:
  http://usermodelinux.org/
  Once you execute the UML binary, a Linux system boots in the terminal and opens some consoles.
- Download and install kernel sources, 2.6.18 (this version is the version of the binary provided below). Install it from your distribution repository or:
  ftp://ftp.metu.edu.tr/pub/mirrors/ftp.kernel.org/pub/linux/kernel/v2.6/linux-2.6.16.18.tar.gz
  (For your modules to work with the binary, you should have this version). You should also have a 2.6.x kernel working in the host system. Assume sources are installed under `/usr/src/linux-source-2.6.18/`
- Install latest *uml-utilities* package of your distribution
- Download the files under:
  http://www.ceng.metu.edu.tr/courses/ceng536/sources/uml/
  Files and

`debian-root.gz`	91M	Root filesystem of your Linux
`kernel-conf`	12K	Kernel config to copy as .config
`ldd3-samples-1.0.0.tar.gz`	77K	Sample sources from the book
`ldd3_pdf.tar.bz2`	11M	Chapters of the book
`linux.gz`	9.4M	UML binary

- Extract and decompress all packages. Give execute permission to `linux`. Assume all files are under `/home/`*`youruser`*`/uml`
- execute this command to test your environment:
  `./linux ubd0=my-root,debian-root`
  You should have a system booting. You can login as `root` without any password.
- UML system mounts `/home` as the `/home` of the host system. So you can change directory to `/home/youruser/` and access your files in the host system.
- copy kernel-conf as `/usr/src/linux-source-2.6.18/.config`
- In host system, change directory to `ldd3-samples-1.0.0/scullc`
  execute:
  `make KERNELDIR=/usr/src/linux-source-2.6.18 ARCH=um`
  You should have `scullc.ko` file is created (ignore a warning about vmlinuz)
- In UML system change directory to `/home/`*`youruser`*`/uml/ldd3-samples-1.0.0/scullc`
- In UML system, execute:

```
chmod +x scullc_load scullc_unload
./scullc_load
echo "hello" >/dev/scullc0
cat /dev/scullc0
```

- If it echoed back your "hello", it works. Now you can change "scullc" as your device: "pstackdev"