CS 470 - Operating Systems
Spring 2015 – Homework 1
25 points

Out: January 16, 2015
Due: January 23, 2015 (Friday)

The purpose of this homework is to provide experience with developing a kernel module in Linux.

Complete the Linux Kernel Module project on pages 96-101 of the textbook using a virtual machine. It consists of two parts: creating a simple kernel module that can be loaded and removed from the kernel and using the kernel linked list structure.

The files needed to complete this project are available on csserver in directory /home/hwang/cs470/hwk1. The Linux virtual machine image (debian-cmpt352.vmdk) should be copied to your own development space. The kernel module stub (simple.c) and makefile should be copied into the created virtual machine. The makefile will compile the stub into a kernel module as described in the textbook. Note that if you have your own Linux machine (i.e. you have sudo privileges) on a laptop, you can create the kernel module directly on the machine. However, errors in kernel modules can cause machines to crash, so it is recommended that a virtual machine be used.

The Linux virtual machine image can be run in a Virtual Box VM. Virtual Box is available on the lab machines (both Linux and Windows), or can be downloaded from the Virtual Box website (http://www.virtualbox.com). Instructions on how to create a virtual machine from the provided image file is available from the textbook website (www.os-book.com – click on the textbook cover, then the Linux Virtual Machine link; follow the directions for Installation Using a Virtual Machine Image).

(20 points) Implement the Linux Kernel Module project as outlined in the textbook. The coding for this homework is to be done individually, though you can confer with others regarding how to use the kernel data structures and commands.

(5 points) Demonstrate the project to the instructor as outlined in the textbook no later than 4:30pm on Friday, January 23. Appointments may be made during most times the instructor does not have scheduled activities. Demos may be attempted at most two times after which late penalties will accrue per attempt.

What to Submit
Create a tarfile or a zipfile containing well-documented code and the makefile for the kernel module. Submit your archive using the submission system (http://submission.evansville.edu). Your username is your ACENET username with suffix "-cs470" appended to it (e.g. dh27-cs470), and your password is your student ID number including the leading 0 (i.e. 7 digits). The grading script only will accept submissions. It will not run anything.