HW5 Write up Operating system

Ding Qin

Vinay Krishnan

For this homework assignment we created a kernel module that acted as a driver for a virtual character device. The user has the ability to open, close, read, and write to the device. The user first writes to the device then, when the user reads from the device, it outputs what the user had just written to it.

To do this we used the given Char device example code which only had the read implemented. In order to implement the Write portion of the module, we had to modify a few elements in the given program. First we had to create two global variables called bytes\_read and char\_num. The variable bytes\_read will be the number of bytes that have been read since the file opened and char\_num is the about of characters stored.

In the device\_open function we took out the sprintf because we do not want a hard coded output.

In device\_read we created a new int variable called read and set it equal to bytes\_read. This will store the current value of the bytes\_read, before any action is performed. Then It checks to see if it’s at the end of the message. If it is not then it goes through the message and puts that in userspace. Then it returns the number of bytes put into the buffer.

In Device\_write we set char\_num to 0 to initialize the amount of bytes written so far. Then we checked to see if the amount of bytes written was greater than the buffer length. If it wasn’t then the message gets put into the kernel space.