

EEL 4930/5934 Advanced Systems Programming

Assignment 3

due Monday, February 23rd by midnight.

In this assignment you are going to write a character device driver by extending the simple driver we studied in class (see slides DDIntro.pptx) in the following ways:

1. Define a device structure and embed `struct cdev` in that structure:

```
struct asp_mydrv {
    struct list_head list;
    struct cdev dev;
    char *ramdisk;
    struct semaphore sem;
    int devNo;
};
```

2. Support a variable number of devices that can be set at load time (default will be 3) (see DDScullIntro.pptx). The device nodes will be named `/dev/mycdrv0`, `/dev/mycdrv1`, ..., `/dev/mycdrvN-1`, where N is the number of devices. Please have the device driver create the device nodes.
3. Store the devices in a linked list using kernel linked list utilities (note the `list` field in `asp_mydrv`) (see slides DDKernelLL.pptx).
4. A device cannot be opened concurrently. Please use kernel semaphores to achieve synchronization (see <http://lwn.net/Kernel/LDD3/>, Section 5.3 and DDScullIntro.pptx). Please make sure that the blocking can be interrupted by the user.
5. All the resources (including the ramdisk, the device structures, and device nodes) should be recycled/freed at unloading time.

The assignment is due Monday, February 23rd by midnight. Please submit all your files along with a Makefile and a README file on CANVAS.