

## **CSE 542 Small Home Work Project 4**

***Assigned: Tues, Sep 21***

***Due: Thurs, Oct 7, 11:00AM***

***Late submissions will not be accepted***

***Group effort***

The primary goal for this project is to familiarize yourself with the ext3 Linux file system. For this home work, read the ext3 file system code available in the directory fs/ext3/. Briefly describe the functionality of each “non static” function available in this directory. Then make one modification to this code and report your experience with the modification. You should report what you hoped to achieve with this modification, how you hoped to test whether the change produces the desired effect and your experiments to show that your modifications either did or didn’t produce the desired results. Note that, while installing your kernel, you need some raw partition to use as the experimental ext3 file system.

An excellent Linux kernel book is “Linux Kernel development” by Robert Love.

Here are some questions to help guide you:

What types of files do you think ext3 is optimized for:

- small/large files
- sequential/random access
- for sequential files: all at once/delay between reading files
- expected file life time: persistent/ephemeral [we will read file system characterization paper on Thursday].

Is ext3 “optimal” for reading and writing large files in its entirety (copying DVD movie from the DVD to your hard disk? Playing the DVD movie from your hard disk [you don’t have to read as fast as you can, only as fast as you can play]? What about temp files? What about database files (you could install a database such as mysql/postgres to check this). What about web files (static pages). What about an application that you use a lot?

Based on your conclusions, try ext3 for scenarios where you think ext3 would work well and verify that it does. Try for scenarios where it wouldn’t work so well and see if it really doesn’t? See if aggressive pre-fetching/buffering would help.