

CS 4900/5900

Programming Assignment 2 Part 3

Data Extraction and Recovery Tool

Due: Wednesday, April 16 (11:59pm)

Overview:

In this last part of Assignment 2, you will create a program that creates a summary report about all the 'hidden' information in your Ext2 file system. This hidden information includes the following:

- File slack: When files shrink, the contents at the end of the file that are no longer part of the file are usually not actually deleted. The system rather just changes the file size information in the inode. These extra bytes past the end of a file are known as file slack.
- Deleted files: When a file gets deleted, the file system usually does not actually delete the file contents (immediately). It also doesn't completely delete the corresponding directory entry and the file inode. The directory entry gets 'skipped' by setting the inode number of the deleted file to 0, and the rec length of the entry preceding the deleted entry gets set to the entry following the deleted entry.
- Inodes: When a file gets deleted, its inode does not actually get deleted. All of the contents are still there. The only thing that happens is that the corresponding bit in the Inode bitmap gets cleared to indicate the inode is available to be reused.
- Data Blocks: When a file gets deleted, its inode should still be accessible (until/unless its overwritten). Since the inode still exists, the data block pointers in the inode also still point at the data blocks of the deleted file. The system merely clears the data block bitmap entries for these blocks.

Requirements:

Write a program that extracts as much of the above information as possible. The program should create a summary report that lists file slack, deleted files, information about deleted inodes, and the data blocks (i.e., contents) of deleted files.

Your program should be called 'ext2_extractor' and have one argument (i.e., the name of the ext2 file). Your program should be called like this:

```
bash> ext2_extractor <ext2_file>
```

I will provide an ext2 file system with a variety of deleted contents for you to test your program against.

Submission:

Submit your program (from p2.cs.ohio.edu) using the following command:

```
bash> /home/drews/bin/490submit 4
```

Don't forget to create a makefile.