For details on the cs5600fs file system format and the FUSE library please see the accompanying document.

Materials

You will be provided with the following files in your <id>-hw3 Git repository:

- compile.sh
- homework.c – skeleton code
- misc.c – additional support code
- image.c, blkdev.h – the disk image device and blkdev header file (see docs)
- disk1.img.orig, disk2.img.orig – sample disk images
- mkfs-hw3.c – utility for creating new disk images
- q1test.sh, q2test.sh, q3test.sh – test scripts for questions 1, 2 and 3
- read-img.c – utility for parsing disk image files and displaying them.

Additional information beyond the accompanying document and README.txt may be found in source file comments.

Question 1 – command line read-only access

Implement code for read-only command-line access to 5600fs disk images. You will need to implement all the functions needed to pass the tests in q1test.sh; note, however, that passing all these tests is not a guarantee of correctness.

Suggestions:

- At startup create a copy in memory of the superblock and the file access table; access these instead of going to disk for that information.
- For splitting paths into components you may wish to use the 'strwrd' function from the c-programming.pdf file. (under “Course materials” in Blackboard)

Question 2 – command line read/write access

For this question you will need to implement read/write access through the command line interface. You will need to implement all functions needed to pass the tests in q2test.sh, although as before passing these tests is not a guarantee of correctness and thus full credit.

Suggestions:

- Track changes to the file access table and flush them to disk at the end of each operation.
- Use the read-img utility to check whether you are writing to the disk image correctly.

Question 3 – FUSE access

Test and debug FUSE access. Your implementation must handle all of the operations in q3test.sh.

Suggestion: The first thing that FUSE does after mounting a file system is to call getattr(“/”), so you need to handle 'getattr' properly for the root directory, which has a corresponding dirent in the superblock.