

Project 6 – Rubric [175 pts]

Correct Functionality [100 pts]

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Correct functionality will be checked using the various commands as noted in the project writeup.

12 pts – fs_format

- 3 pts – Initializes superblock correctly
 - 2 pts – Allocates 10% towards inodes
 - 1 pt – Properly "rounds up" on inode block count
- 2 pts – Initializes all inodes correctly
- 2 pts – New file system is mountable
- 2 pts – Handles various sizes

15 pts – fs_mount

- 2 pts – Mounts a clean file system of varying sizes
(No allocated inodes – e.g. freshly formatted)
- 5 pts – Mounts a proper file system of varying sizes
(No indirection present)
- 5 pts – Mounts a proper file system of varying sizes
(Indirection is present)
- 3 pts – Mounts file systems with > 10% inode blocks

15 pts – fs_create

- 2 pts – Allocates the "first" inode on a new filesystem
(No previously allocated inodes – e.g. freshly formatted)
- 3 pts – inodes are properly set up after create
(size is zero, valid is true, no direct blocks allocated)
- 2 pts – New inode persists after restart
(content properly written to disk)
- 3 pts – Supports multiple, valid create calls
- 3 pts – Stops allocating when the inode table is full and
avoids disk mangling / crashing
- 2 pts – Finds next free inode in a populated filesystem
Identifies next free inode block

7 pts – fs_delete

- 2 pts – Marks the inode as no longer used
- 3 pts – Avoids deleting un-allocated inodes
- 2 pts – Avoids deleting invalid inodes

4 pts – fs_getsize

- 2 pts – Properly reports the size from an inode
- 2 pts – Properly handles invalid inode requests

20 pts – fs_read

- 1 pt – Properly handles a inode size of zero
- 2 pts – Properly handles an inode size of one direct block or less
- 2 pts – Properly handles an inode size of multiple direct blocks (4 or less)
- 2 pts – Properly handles an inode size of multiple direct blocks (5 or less)
- 5 pts – Properly handles an inode spanning direct + indirect (6 or more)
- 5 pts – Properly outputs various file size combinations
- 3 pts – Properly truncates output on the last block

27 pts – fs_write

- 3 pts – Properly handles a write increasing a file to one block or less
- 3 pts – Properly handles a write increasing a file to four blocks or less
- 3 pts – Properly handles a write increasing a file to five blocks or less
- 3 pts – Properly handles a write increasing a file to six blocks or more
- 3 pts – Properly handles truncation in the last block
- 3 pts – Properly handles the disk being full
- 3 pts – Properly handles writing over an existing inode (same size)
- 3 pts – Properly handles writing over an existing inode (smaller size)
- 3 pts – Properly handles writing over an existing inode (bigger size)

Combinations [30 pts]

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- 3 pts – Clean file system (small – 7)
format, debug, mount, create, delete, quit
- 3 pts – Clean file system (large – 1519 blocks)
format, debug, mount, create, delete, quit
- 7 pts – Pre-made file system (medium – 700 blocks)
debug, mount, cat, copyout, delete, copyout, create, create, debug, quit
- 7 pts – Pre-made file system (medium – 700 blocks)
mount, delete, create, create, debug, copyin, copyout, quit
- 10 pts – Pre-made file system (medium – 700 blocks)
format, mount, create, create, copyin, copyin, cat, copyout, delete, copyin, copyout, quit

Error Handling [25 pts]

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15 pts – Properly handles basic logic errors – do not crash, do not mangle

- Mounting of improper file system

- Format a mounted disk

- Mounting where disk blocks do not agree (superblock vs. actual)

- Mounting of invalid file system (invalid direct pointers, indirect pointers, etc.)

- Operations on unmounted file systems

- Illegal inode accesses (create, delete, cat, copyout)

10 pts – Instructor-defined error sequences

Documentation / Submission [20 pts]

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- 1 pt – Includes a README.md file

- 1 pt – Proper use of branching with git as specified in instructions

- 2 pts – All group members are identified

- 2 pts – Contributions of group members are identified

- 2 pts – Consistent git commits

- 2 pts – Proper coding style / commenting

- 10 pts – Narrative

See above for the README.md contents (group members, contributions).