Filesystem Usability
Activity Instructions

(format borrowed from TIDES and FIC workshops:)

An important goal of the filesystem is to hide the complexity from the user. In this activity, you are going to help Dr. Parikh open her inbox (with apologies to Dr. Tanenbaum). You are aware that she will likely want to quickly move away from all the wild requests in there to a more productive task, so you will want to make sure you are caching the necessary blocks according to typical file system optimizations.

As you do this activity, please keep the supplies together so they can be reused! Turn them all back in at the end, please!

Please follow these steps:

1. Locate your block group.
2. Arrange your given inodes and blocks in the appropriate order in your block group. *For now, let's assume this OS has all given inodes and blocks in the same block group.* (Why do we need to assume that?)
3. After getting approval for your order, take your block group and locate it appropriately on the virtual SSD. The SSD is outside the classroom on the glass around the lab. Take a piece of tape with you. *Only one person from the group should do this.*
4. Consider your buffer cache. How many blocks does it hold? Where is it located in the system?
5. Take your buffer cache and put it in memory. Memory is either the white board or the wall of the classroom with the ramp. *Only one person from the group should do this.*
6. Now, consider that Dr. Parikh's inbox is in directory /usr/dnp/mbox. What do you need to get first to find that file? Send one person to retrieve that block (and only that block) and bring it back to your group.
7. What does it tell you? What do you need to get next? Before you do that, what should you do with this block? *You may have no more than one block with your group at any given time.*
8. Repeat steps 6-7 until you have retrieved the first data block of her inbox.
    a. How many disk accesses did it take?
    b. What is in your buffer cache?
    c. What is your current working directory?
    d. What did you notice?

Inode 1
mode size times owner
67

Inode 6
mode size times owner
132

Inode 26
mode size times owner
406

Inode 60
mode size times owner
256
512

Block 67	
1	.
1	..
4	bin
7	dev
14	lib
9	etc
6	usr
8	tmp

Block 132	
6	.
1	..
19	dana
30	lukas
51	kim
26	dnp
45	matthew
16	angela

Block 406	
26	.
6	..
64	classes
92	grants
60	mbox
81	minix
17	blog
32	papers

Block 256
M1: Hi, Dr. Parikh,\nI am writing to ask you why discrete math is important. How does it relate to computer science? Do you think I could skip your class and take it later? I really want to start on the upper division electives. Do you think there's one I can take before finishing 314?\n\n\nA freshman

Block Group for Group #_____

This is a linear array of blocks. Inode array is first, then data blocks. Order matters.

Buffer Cache for Group #_____

This is just memory. It can hold a maximum of 4 blocks.

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