

NAME: _____ KEY _____ (FIRST NAME FIRST)

SCORE: _____

COSC 6360

QUIZ #4

NOVEMBER 23, 2009

This exam is closed book. You can have one page of notes.

1. True or False (8 points per correct answer)

T ___ F X LBFS uses callbacks. (It uses leases.)

T ___ F X Coda is stateless. (Callbacks make Coda stateful.)

T X F ___ Journaling file systems require metadata updates to be written twice to disk.

T ___ F X NFS servers do not trust their clients.

T ___ F X BSD-LFS assumes that the disk controller will *never reorder* write requests.
(Sprite-LFS makes that assumption.)

2. Which are the main advantage and the main disadvantage of using journaling with *asynchronous log updates* compared to using journaling with *synchronous log updates*?

a) *Main advantage*: (10 points)

Asynchronous log updates allow a much faster disk throughput.

b) *Main disadvantage*: (10 points)

Asynchronous log updates do not guarantee the durability of metadata updates

3. How can you tune the average sizes of the chunks detected by the LBFS chunk detection algorithm? (10 points)

We can tune the average size of LBFS chunks by increasing the number of bits of the Rabin fingerprint that should match a predefined pattern in order to become a chunk boundary. Assuming fully random data, requiring n bits to match a predefined pattern should result in an average chunk size of 2^n bytes.

4. What is the purpose of *file hoarding* in Coda? (10 points)

To let users work on their personal computers in disconnected mode.

5. What are *safe asynchronous writes*? (10 points) What is their main advantage? (10 points)

Safe asynchronous writes were designed to speed up the performance of NFS by letting the server do asynchronous, that is, non-blocking writes. When a client starts requesting safe asynchronous writes, it informs the server it can perform non-blocking writes and its own copy of all the data sent to the server. A new **commit** operation lets clients check with the server that the data were actually written to disk. If this is the case, the client can safely delete its own copy of the data. Otherwise, it resends to the server its copy of the data that were not written.