

Name: _____ (First name first)

Score: _____

COSC 6360

QUIZ #3

AUGUST 3, 2009

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

1. Give two file organizations that guarantee the **consistency** of metadata updates but not their **durability**. (2x10 points)

Soft updates.

Journaling with asynchronous log updates.

2. What does an NFS client do when it does not receive a reply from the server? (10 points) Why can it do that? (10 points)

An NFS client that does not receive a reply from the server after it has sent a request resends the request. This is only possible because all NFS requests are idempotent, which means that the effect of multiple executions of any given request is the same as the effect of a single execution of the request.

3. Which important feature of CODA would be lost if **callbacks** were replaced by **leases**? Why? (20 points)

If callbacks were replaced by leases, CODA clients could not operate anymore in disconnected mode because they would be unable to obtain leases or renew them for the files they want to access.

4. How does the Blue file system manage its **write queues**? (10 points) How does this impact the power consumption of the system? (10 points)

When it is time to write some of the blocks in a write queue to the device associated with the queue, Blue flushes the whole contents of that write queue. This creates a write access pattern consisting of bursts of write accesses separated by periods of idleness during which the device can be powered down.

5. You are to design a FARSITE file system that can tolerate **two Byzantine failures**.

a. What is the **minimum** number of members in each directory host? (10 points) seven members

b. What is the **minimum** number of copies each data block should have? (10 points) three copies

Explanation: We need seven members in each directory host in order to tolerate two simultaneous Byzantine failures but only three copies of each data blocks to tolerate the loss of two copies.