

NAME: \_\_\_\_\_ (FIRST NAME FIRST)

SCORE: \_\_\_\_\_

COSC 6360

QUIZ #5

DECEMBER 11, 2009

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

1. True or False (5 points per correct answer)

T  F  Zyzzyva is always faster than conventional Byzantine fault-tolerant protocols.

T  F  FARSITE guarantees one copy semantics.

T  F  Pergamum batches up small files into larger entities before storing them.

T  F  Most of the Blue FS functionality is handled by a user-level server.

2. What is the minimum number of members in a FARSITE directory group? (10 points) Why? (10 points)

Four members if we want it to be able to tolerate one Byzantine failure.

3. What is the function of the *enode caches* in the Blue File system? (10 points) How are they organized? (10 points)

The *enode cache* is used to find out which storage devices attached to a specific computer hold a copy of a given object, whether the attributes of that object are valid are valid, and whether whether some of its data blocks are cached. "Enodes are hashed by file id and stored in an *enode cache* managed by LRU replacement. The default size of the cache is 1 MB." (Nightingale and Flint, "Energy-Efficiency and Storage Flexibility in the Blue File System," Proc. 6th USENIX Symp. on Operating Systems Design and Implementation, Dec. 2004.)

4. When does a Zyzzyva *tentative checkpoint* becomes a *committed checkpoint*? (20 points)

A checkpoint becomes a committed checkpoint as soon as all the history it contains has become committed history.

5. What are the two main functions of Pergamum *digital signatures*? (2x5 points) Where are they stored? (5 points) Why? (5 points)

To verify the integrity of the tome's contents and, by exchanging them with other Pergamum tomes, to verify the integrity of distributed data.

They are stored in a small flash drive so they can be consulted without powering the tome's hard drive.