

Name: _____ (First name first)

Score: _____

COSC 6360

QUIZ #3

OCTOBER 25, 2010

Closed book. You can have with you one single-sided 8½ by 11 sheet of notes. Each question is worth 20 points.

1. Under which conditions will the CSP command **west!count;** fail?

a) If west terminates.

b) If counts becomes undefined.

2. Consider a RAID-5 array having five data blocks, namely, $b_1, b_2, b_3, b_4,$ and b_5 and one parity block p per stripe.

a) How many disk drives does it comprise? _____ **six** **drives**

b) Assuming that block b_3 suddenly becomes unavailable, how could you reconstruct its contents?

$b_3 = b_1 \text{ XOR } b_2 \text{ XOR } b_4 \text{ XOR } b_5 \text{ XOR } p$ _____

3. Consider a **multiple-ring** Totem system consisting of three rings respectively named A, B and C. Assuming that a given processor has received messages with the following time stamps

<i>From ring</i>	<i>Messages sent at</i>
A	4:25 PM, 5:05 PM
B	4:55 PM
C	4:35PM

which messages will be delivered by the processor if all messages are **agreed delivery messages** and

a) No guaranteed vector message was sent by any ring?

It will deliver messages sent at 4:25 PM

b) Each ring sent a guaranteed vector message at exactly 5:00 PM?

It will deliver messages sent at 4:25 PM, 4:35 PM and 4:55 PM

4. What are the main advantage and the main disadvantage of using **journaling with synchronous log updates** compared to using **soft updates**?

a) **Main advantage:**

Durability of metadata updates: they are immediately stored in stable memory.

b) **Main disadvantage:**

High cost of the policy resulting in a lower performance of the file system.

5. How can Sprite LFS retrieve the contents of its **i-node map** when the system reboots after a crash?

a) Retrieve from the checkpoint area the addresses of all i-node map blocks at checkpoint time.

b) Scan the portion of the log containing the disk writes those happened after the checkpoint time and search for i-node map blocks.