

Name: _____ (First name first)

Score: _____

COSC 6360

QUIZ #2

MARCH 1, 2010

Closed book. You can have with you one single-sided 8½ by 11 sheet of notes.

1. Give **one** example of:

a) an **external pager** in the Mach operating system: (10 points)

the file system

b) a **memory object** managed by that external pager: (10 points)

a file

2. Consider a 64-bit system using a clustered page table. What would be the size of page table entry if the page table uses (a) **partial subblocking** with a subblocking factor of **two** and (b) **complete subblocking** with the **same** subblocking factor? (2×10 points)

Page table entries will occupy 3×8=24 bytes if the page table uses partial subblocking and

4×8=32 bytes if it uses complete subblocking.

3. In the ARC cache replacement policy, which events result in an update of **target_T1**? (2×10 points)

a) **Target_T1 will increase** when a page fault is caused by a page that happens to be in B1

b) **Target_T1 will decrease when** when a page fault is caused by a page that happens to be in B2

4. Munin is said to use an **eager release policy**. Why? (10 points) What would be the corresponding **lazy release policy**? (10 points)

An eager release policy distributes all updates as soon as they are released. A lazy policy does not forward the same updates until some other process requests them.

5. When should we use the Munin **write-shared** protocol? (10 points) Why? (10 points)

We should use the Munin write shared protocol whenever two or more processes access distinct variables that reside in the same page and none of these variables are accessed by more than one process. This situation is known as false sharing and results in many unnecessary data transfers among the processes, creating the so-called "ping-pong effect." The Munin write shared protocol avoids these transfers.