COSC 6360 SECOND MIDTERM MARCH 26, 2003

This exam is **closed book**. You can have **one sheet** (that is, **two pages**) of notes.
Please answer every part of every question

1. As we mentioned in class, Munin implementation of the write-shared protocol relies on a feature of the V System allowing user-level processes to catch read-only access violations. How would you implement the same write-shared protocol on an architecture lacking that feature? (5 points) Will your solution be as efficient as the Munin solution? Why? (5 points)

2. In his paper on the confinement problem, Lampson argues that it is much easier to *limit* the amount of information that can be leaked by a rogue program than to *eliminat*e any leakage. Explain what he means. (10 points)

3. What is the difference between the eager release protocol used by Munin and the lazy release protocol used by Threadmark? (10 points) Which one is more efficient? (5 points) Which one is easier to implement? (5 points)

4. Does C have any statement with the same expressive power as the CSP *alternative command*? (5 points) Why? (5 points)

5. What is the difference between a *logical clock* and a *physical clock*? (10 points)

6. What is the main advantage of treating the thread issuing a cross-domain call and all downstream threads as a single scheduling entity? (5 points) Would it not been easier to merge these threads into a single thread? (2×5 points)

7. What is the function of Totem *guaranteed vector messages?* (10 points)

8. Explain why SPIN is (a) more *extensible* than UNIX, (b) more *efficient* than Mach and (c) s*afer* than, say, MS-DOS? **(**3×5 points)