

**GEORGE MASON UNIVERSITY
DEPARTMENT OF COMPUTER SCIENCE**

CS 571 – Operating Systems

Fall 2003

Assignment 1: DUE Sept 8

Experiment 1. Thread and Process Creation Study the programs `thr_create.c` and `fork.c`. Compile and execute the programs. These programs measure the average time to create a thread using `thr_create` and to create a process using `fork`. What do you conclude from this experiment? Briefly describe the reasons for the difference in timings.

Experiment 2. Processes vs Threads Study the two programs `thr_shared.c` and `proc_shared.c`. Compile and execute the programs. These programs are identical except that one uses threads and the other uses processes. What do you conclude from this experiment? Explain the reason for the difference in behavior.

Experiment 3: The Lost Update Problem Study the program `shared_data.c`. Compile and execute it. The main thread and the child thread are both updating (i.e., modifying) the shared variable `shared_number`. Is the program behaving “correctly”? What do you conclude from this experiment?

- NOTES**
1. All these programs are available from the web page with URL <http://cs.gmu.edu/~setia/cs571/assignments/assign1>. These programs have been tested on Solaris and Linux platforms.
 2. Read the README file in the directory for directions on how to compile and link the programs
 3. The Useful Links page on the class home page has links to web sites where documentation on Pthreads (including the Solaris Multithreaded Programming Guide) is available.