

CSCI 397C-25 Take-Home Final Exam

Students: **Keep a copy** of your exam and mail, by regular mail (no signature required), to:

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Answers: double spaced, single sided, 12 pt. Times, 1" margins, no more than 5 pages max. Extra pages will not be read!!!! Do not E-mail.
Don't start until you can finish it in one sitting, 3 hours absolute max!
Send, along with your project notebook, not later than 18 Dec., 1998
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- 1A. Explain the difference in function between listen, socket and accept system calls. (Don't just copy their definition from the book. Explain the difference in function & purpose of the three calls.
- 1B. How can several clients have simultaneous connections to the same host on the same port? (e.g., telnet, port 23). (How can the server be sure which one it is communicating with?)
2. What are the major differences between threads and processes?
 - a. scheduling considerations and overhead
 - b. address space
 - c. form of code executed when new one is created
 - d. How would you decide which one to use for a given application
3. What are the differences between mutexes and semaphores?
 - a. How would you choose which one to use
 - b. What are the circumstances that would allow/prevent use of mutex
 - c. What are condition variables and how do they relate to mutexes
4. Explain how the use of FIFO's instead of pipes could affect the coding of the bi-directional torus problem. (What is the complicating factor using pipes and how would FIFO's help? Be as explicit as possible.)
5. Besides the obvious complication of needing a signal handler, what complications are added to program code when selected signals are unmasked? Why don't these same problems apply to a program that doesn't use signals?
6. In what sense are ordinary signals "unreliable" and what feature was added by POSIX to help?