Vanderbilt University
Department of Electrical Engineering and Computer Science

CS 282: Principles of Operating Systems II
Spring 2003

Fourth Quiz

Quiz directions: please answer all questions clearly, concisely, and legibly. This is a closed-book quiz. You must not use calculators, slide-rules, nor protractors.

1. The following question has two parts:
   - (2 points) Name a benefit and a drawback of the 1:N "user level threading model."
   - (2 points) Name a benefit and a drawback of the 1:1 "kernel level threading model."
   - (2 points) Name a benefit and a drawback of the N:M "hybrid threading model."
2. (1 point) Concisely explain the key purpose of a *synchronous event demultiplexer*.
3. (1 point) Briefly explain the key difference between condition variables and mutexes.

4. (1 point) If a `select()` call is used before calling `accept()` briefly explain why the socket handle used by `accept()` should always be set into non-blocking mode.

5. (2 point2) Explain two different reasons why the `ACE_Handle_Set_Iterator` is better than iterating through an `fd_set` using the low-level C macros.

6. (3 points) Briefly explain three different motivations for writing concurrent servers.

7. (1 point) Briefly explain one common pitfall of associating threads with objects in OO programs.

8. (1 point) What is the most important difference between a ”detached” and a ”joinable” thread?