

Problem Set 6

CS 411

Due at the beginning of class on the first class day of the following week.

Sections 4.1–6

1. Provide two programming examples in which multithreading does not provide better performance than a single-threaded solution.
2. Which of the following components of program state are shared across threads in a multi-threaded process?
 - (a) Register values
 - (b) Heap memory
 - (c) Global variables
 - (d) Stack memory
3. Consider a multicore system and a multithreaded program written using the many-to-many threading model. Let the number of user-level threads in the program be greater than the number of processing cores in the system. Discuss the performance implications of the following scenarios.
 - (a) The number of kernel threads allocated to the program is less than the number of processing cores.
 - (b) The number of kernel threads allocated to the program is equal to the number of processing cores.
 - (c) The number of kernel threads allocated to the program is greater than the number of processing cores but less than the number of user-level threads.