Assignment Four

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4.1

1. When we have a large number of operations, each consumes very little time. If we create a thread for each operation, the time used for creating and terminating threads is actually longer than the time used for operations. In this way, multi-threading doesn't work better.

2. When we have a limited amount of resource, if we create lots of threads, to schedule those threads can take a long time. In this condition, single-threading is actually more efficient.

4.4 Global variables.

4.5 Yes. When running on multiprocessor system, different threads can execute on different processors at the same. While on single-processor system, the processor has to switch frequently among threads, which is slower.

4.8

a. Every thread is mapped to a processor, but the other processors are idle at the same time.

b. Every thread is mapped to a processor, and there are no idle processors. But when a thread makes a blocking system call, the corresponding processor will be idle.

c. Every processor is mapped to a thread, but the other threads are suspended at the same time. When a thread makes a blocking system call, it can be replaced by other threads, which increases the performance.