Threads & Concurrency

Review Questions

Section 4.1

4.1 How many threads does a traditional, heavyweight process have?

4.2 Provide at least three benefits of multithreaded programming.

Section 4.2

4.3 True or False? Concurrency is only possible with parallelism.

4.4 True or False? Amdahl's Law addresses the disproportionate effect of the serial portion of a program.

4.5 List at least three challenges when designing programming for multicore systems.

4.6 What are the two general types of parallelism?

Section 4.3

4.7 List the three common ways of mapping user threads to kernel threads.

4.8 True or False? Only Linux and Windows implement the one-to-one model.

Section 4.4

4.9 What are the two approaches for implementing a thread library?

4.10 What are the three main thread libraries in use?

4.11 True or False? PThreads is typically only implemented on UNIX-like systems.

4.12 True or False? PThreads is only a specification, not an implementation.

4.13 What is the PThread API for creating a thread?

4.14 What is the Windows API for creating a thread?

4.15 What Java method is used for allocating and initializing a new thread in the JVM?

Section 4.5

4.16 Provide at least two techniques for supporting implicit threading.

4.17 True or False? Grand Central Dispatch only works for Apple's Mac OS X and iOS operating systems.

Section 4.6

4.18 True or False? The semantics of the `fork()` system call can vary on multithreaded systems.

4.19 What are the two scenarios for canceling a target thread?

4.20 What is the PThreads API for thread cancellation?

Section 4.7

4.21 True or False? Windows threads provide both user and kernel stacks.

4.22 What term does Linux use to refer to a process or a thread?