Thread Synchronization

- It is necessary to synchronize the activities of the various threads
    - all threads of a process share the same address space and other resources
    - any alteration of a resource by one thread affects the other threads in the same process
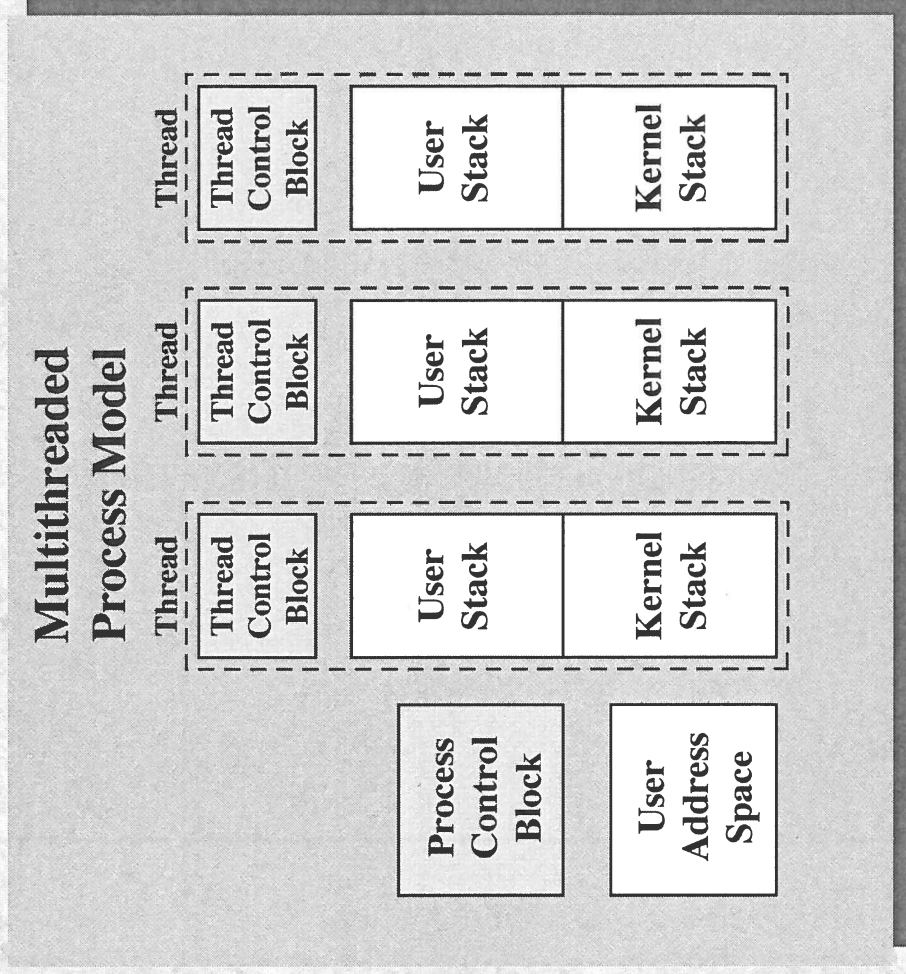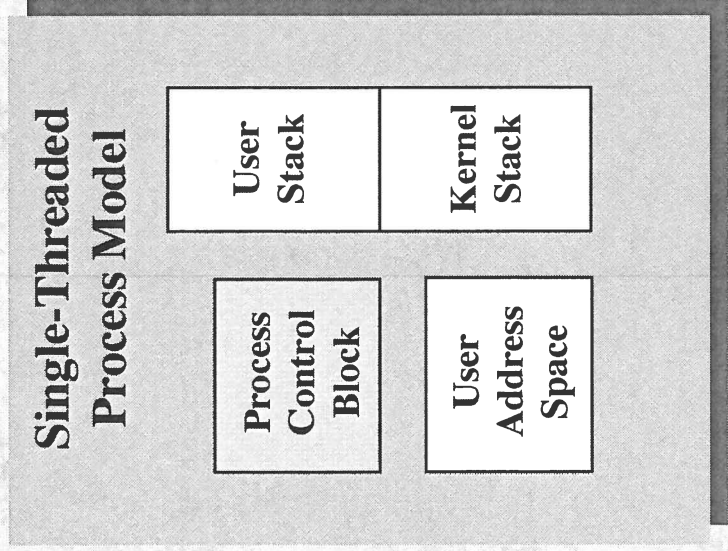
Single-Threaded Process Model

Process Control Block	User Stack
User Address Space	Kernel Stack

Multithreaded Process Model

Thread	Thread	Thread
Thread Control Block	Thread Control Block	Thread Control Block
User Stack	User Stack	User Stack
Kernel Stack	Kernel Stack	Kernel Stack

Process Control Block	User Address Space

Figure 4.2   Single Threaded and Multithreaded Process Models

Benefits of Threads

- Takes less time to create a new thread than a process
- Less time to terminate a thread than a process
- Switching between two threads takes less time than switching between processes
- Threads enhance efficiency in communication between programs