Unit OS3: Concurrency

3.5. Quiz

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Dekker's Algorithm

Dekker's algorithm solves the synchronization problem for two threads (processes). Which property cannot be attributed to Dekker's algorithm?

a) Mutual exclusion
b) Progress
c) Guaranteed wait order
d) Bounded waiting

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Synchronization Hardware

There are several approaches taken by computer architecture and OS to solve the uniprocessor synchronization problem. Which one is not among them?

a) Test-and-Set instruction
b) Exchange instruction
c) Blocking of interrupts
d) Cut-and-Paste instruction

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Multiprocessor Synchronization

Which of the concepts mentioned below is used by the Windows multiprocessor kernel for synchronization when accessing global data structures?

a) Mutexes
b) Semaphores
c) Spinlocks
d) Events

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User-Kernel mode transitions

The processor may change from user to kernel mode for several reasons. Which one is not among them?

a) Execution of a system call
b) Occurrence of an interrupt
c) Multiplication of two integer numbers
d) Software exception

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Interrupt processing

When processing an interrupt, the Windows kernel has to perform a number of activities. Which one is not a common interrupt-related activity?

a) Scheduling of an Asynchronous Procedure Call (APC)
b) Context switch to a new thread
c) Scheduling of a Deferred Procedure Call (DPC)
d) Execution of the Interrupt Service Routine (ISR)

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DPCs and APCs

Windows uses an elaborate approach to interrupt processing. Which concept is not part of this approach?

a) Kernel-mode DPC
b) User-mode DPC
c) Kernel-mode APC
d) User-mode APC

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Busy waiting

The Windows kernel supports spinlocks, mutants (mutexes), semaphores, and event objects. Which of those constructs involve busy waiting?

a) Mutex
b) Spinlock
c) Semaphore
d) Event object

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Windows API Synchronization Constructs

The Windows API supports a variety of constructs for synchronization and (interprocess) communication. Which of the concepts mentioned does not work across processes boundaries?

a) Mailslots
b) Mutexes
c) Critical sections
d) Event objects

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Windows API - Critical Sections

What happens if you create a critical section in shared, memory mapped storage? Can both processes use the critical section?

a) Yes
b) No
c) Yes, but only on multiprocessors

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