24 Lecture - CS506

Important Mcqs

Certainly, here are 10 multiple-choice questions (MCQs) related to advanced concepts in Multithreading, along with their solutions and multiple options:

****Question 1: What is a mutex in multithreading?****

A) A thread synchronization technique

B) A lightweight thread

C) A type of thread pool

D) A hardware component

****Solution: A****

****Question 2: Which synchronization primitive allows multiple threads to access a resource simultaneously?****

A) Mutex

B) Semaphore

C) Critical section

D) Barrier

****Solution: B****

****Question 3: What is a deadlock in multithreading?****

A) Efficient resource sharing among threads

B) Threads collaborating effectively

C) Multiple threads waiting for each other, leading to a standstill

D) Thread execution in random order

Solution: C

Question 4: How does a barrier work in multithreading?

A) Prevents thread creation

B) Ensures a thread accesses resources safely

C) Allows a group of threads to wait for each other before proceeding

D) Terminates a thread

Solution: C

Question 5: What is thread pooling in multithreading?

A) Running threads in parallel

B) Creating new threads for each task

C) Reusing a group of pre-initialized threads for tasks

D) Assigning threads to different processors

Solution: C

Question 6: What is data parallelism in multithreading?

A) Running multiple threads on a single core

B) Running multiple threads on different cores

C) Running a single thread for all data processing

D) Running multiple threads for a single task

Solution: B

Question 7: What is the purpose of the `volatile` keyword in multithreading?

A) Marks a thread-safe class

B) Defines a thread pool

C) Ensures visibility of variable changes across threads

D) Implements multithreading algorithms

Solution: C

Question 8: What is the difference between a latch and a barrier in multithreading?

A) Latch synchronizes threads; barrier provides mutual exclusion

B) Barrier synchronizes threads; latch allows a group of threads to wait

C) Latch allows multiple threads to access resources; barrier prevents it

D) Barrier allows multiple threads to access resources; latch prevents it

Solution: B

Question 9: Which multithreading model involves a combination of user-level and kernel-level threads?

A) Many-to-one

B) One-to-one

C) Many-to-many

D) Many-to-some

Solution: C

Question 10: What is cache coherency in multithreading?

A) Ensuring proper memory allocation for threads

B) Managing thread execution order

C) Ensuring that multiple threads access shared data consistently

D) Distributing threads across different cores

Solution: C