

# Quiz 10 Advanced C++ Concurrency

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1. Which of the following three statements concerning traditional multithreading synchronisation is true?
  - a) Synchronisation mechanisms block waiting thread and can cause performance degradation.
  - b) *Coarse-grained locking* can significantly improve opportunities for parallelism.
  - c) *Fine-grained locking* requires careful design and it increases locking overhead and is more prone to software bugs.
  - d) The use of the C++11 storage class specifier *thread\_local* mitigate or removes the need to use locking mechanisms.
  
2. Which of the following statements regarding the C++ 11 *thread\_local* storage class specifier are true?
  - a) Thread-local variables allow code to have a separate instance of a variable for each thread in a program.
  - b) When *thread\_local* variables are created is implementation-independent.
  - c) When *thread\_local* variables have the same address on each thread.
  - d) *thread\_local* variables share many of their properties with static variables.
  
3. Which of the following features does C++ 11 support?
  - a) Thread-safe containers.
  - b) Thread pools.
  - c) Thread interruption.
  - d) Atomic operations.
  
4. Which of the following statements describe the *ABA problem* are correct?
  - a) The problem is resolved by using a lock-free data structure.
  - b) It is a subtle synchronisation problem.
  - c) It can occur with compare/exchange algorithms in C++.
  - d) It has to do with the visibility/awareness of unchanged values of variables.
  
5. Which of the following statements relating to C++11 are true?
  - a) Atomic flags (the simplest atomic type) are lock-free.
  - b) Atomics are low-level alternatives to mutexes and locks
  - c) We atomically store the value of the atomic value b in the atomic variable a by the assignment operator assignment a = b.
  - d) C++11 has support for atomic integral types.