MCQ Questions - Profiling

1. What is the primary purpose of profiling in HPC?
   A. To enhance the visual appeal of software
   B. To analyze and optimize the performance of applications
   C. To secure applications from cyber threats
   D. To manage user access to resources

2. Which of the following tools is commonly used for profiling in HPC?
   A. Git
   B. Valgrind
   C. Wireshark
   D. Gprof

3. what does the term "hotspot" refer to in the context of HPC?
   A. The section of code that crashes frequently
   B. The section of code that takes the longest time to execute
   C. The part of the system with the highest temperature
   D. The section of code that is least used

4. Which profiling technique measures the execution time of code segments?
   A. Event-based profiling
   B. Time-based profiling
   C. Memory-based profiling
   D. Static analysis

5. What is the role of instrumentation in profiling?
   A. To compile the code without errors
   B. To modify code to collect performance data
   C. To encrypt sensitive data
   D. To document the source code

6. Which of the following is NOT typically a metric gathered during profiling?
   A. CPU usage
   B. Memory allocation
   C. Network bandwidth
   D. User satisfaction

7. What type of profiling collects data on memory usage and leaks?
A. Network profiling
B. CPU profiling
C. Memory profiling
D. I/O profiling

8. How does sampling differ from instrumentation in profiling?
A. Sampling requires modifying the code, while instrumentation does not
B. Instrumentation collects data periodically, while sampling collects data at specific events
C. Sampling collects data at regular intervals, while instrumentation involves code modification
to gather detailed information
D. Instrumentation is used only for memory profiling, while sampling is used for CPU profiling

9. Which profiling tool is integrated with the GNU Compiler Collection (GCC)?
A. Intel VTune
B. NVIDIA Nsight
C. Gprof
D. Perf

10. What is the primary challenge in profiling parallel applications in HPC?
A. The high cost of profiling tools
B. The complexity of interpreting profiling data from multiple threads or processes
C. The need for physical access to the HPC system
D. The limited support for different programming languages