Java(TM) SE Performance Tuning (EC-170-JAV)

Duration: 3 Days

What you will learn

The Java(TM) SE Performance Tuning workshop provides students with the knowledge and skills required to monitor, profile and tune the performance of Java(TM) technology applications. This workshop takes a holistic approach to performance tuning. Students will learn to collect and interpret performance data by monitoring and profiling all levels of the software stack beginning at the operating system level and continuing through the Java Virtual Machine to the application level. The workshop also examines performance tuning as it relates to the use of 64 bit JVMs and multi-core platforms.

Learn To:

Profile Java applications
Tune garbage collectors
Tune Just in Time compilers
Optimize the JVM for Multi-core platforms

Audience

Application Developers
Java Developer
Java EE Developer

Prerequisites

Required Prerequisites
Familiarity with the concepts of memory management, threads, debugging, and performance

Working knowledge of the Java programming language

Suggested Prerequisites
Java Programming Language, Java SE 6 (SL-275-SE6)

Course Objectives

Incorporate monitoring, profiling and tuning into the application development life cycle
Monitor and Evaluate OS resource utilization
Monitor Garbage Collector performance
Monitor the Java Virtual Machine
Profile Java applications
Tune garbage collectors
Tune Just in Time compilers
Examine and tune 64 bit JVMs
Optimize the JVM for Multi-core platforms

Course Topics

Examine Performance tuning
Distinguish between monitoring, profiling and tuning
Incorporate monitoring, profiling and tuning into the application development life cycle
Define and include performance targets for application testing

Monitor and Evaluate OS Resource Utilization
Use tools to measure and interpret: CPU utilization; Network utilization; I/O utilization; Memory utilization; Processes

Monitor and Evaluate JVM Performance
Monitor Garbage Collector performance
Monitor Garbage Collector performance
Measure GC statistics
Measure Java heap usage
Monitor the JIT compiler performance

Profile Java Applications
Examine Java technology application profiling tools
Profile the CPU usage
Profile the heap usage
Use profiling to detect lock contention
Monitor JVM memory usage
Examine Sun studio collector analyzer
Examine the Netbeans profiler and profiling tools bundled with the Java Development Kit (JDK)
Profile a running Java application

Tune garbage collectors
Examine the generational garbage collector architecture
Tune collector generation sizes
Select collector characteristics and requirements
Examine coding anti-patterns that impact garbage collection
Optimize the garbage collector for an application

Tune Just in Time (JIT) compilers
Examine and override JVM ergonomics
Tune the JIT compiler
Create micro benchmarks
Optimize the JIT compiler

Use 64 bit JVM's
Examine 64 bit JVMs
Optimize a 64 bit JVM for a given application

Optimize the JVM for Multi-core platforms
Examine JVM features that leverage multi-core architectures
Optimize and tune the JVM for various multi-core architectures