Java Performance Tuning

Duration: 3 Days

What you will learn

This Java Performance Tuning training teaches performance tuning concepts applicable to the Java programming language. Expert Oracle University instructors will teach you how it applies to Java garbage collectors on the Hotspot JVM, including the G1 garbage collector.

Learn To:

Monitor, profile and tune your Java applications.
Use command line and visual tools to perform these tasks.
Get hands on practice with Visual VM, Java Mission Control, Flight Recorder and the NetBeans IDE.
Use these tools and techniques to analyze Java 7 and earlier JVMs.
Effectively apply tools like Java Mission Control and Flight Recorder to your daily work.

Benefits to You:
Learn how Java garbage collection works and how it affects your applications. Learn how to select the appropriate garbage collector and performance goal for your applications. Finally, use the Mission Control and Java Flight Recorder tools to monitor and analyze your applications.

Related Training

Required Prerequisites

Java SE 7 Fundamentals

Java SE7 Fundamentals

Suggested Prerequisites
Developing Applications for the Java EE 6 Platform

Developing Applications for the Java EE 7 Platform

Java SE 7 Develop Rich Client Applications

Java SE 7 Programming

Java SE 7: Develop Rich Client Applications

Course Objectives

Monitor operating system performance on Solaris

Linux

and Windows

Describe basic principles of performance

Describe the operation of generational garbage collection

List the garbage collectors available in Java including the G1 collector

Monitor performance at the JVM and application level

Monitor and analyze Java application performance using Java Mission Control and Flight Recorder

Profile the performance of a Java application

Tune garbage collection in a Java application

Apply basic performance tuning principles to a Java application

Course Topics

Course Overview
Introduce course

Java Virtual Machine and Performance Overview
JVM Overview
What is Performance?
Performance Methodology

The JVM and Java Garbage Collection

HotSpot GC Basics
The GC Aging Process
G1 GC

Java Garbage Collectors
Garbage Collecting Algorithms
Types of GC Collectors
JVM Ergonomics

Command Line JVM Monitoring
GC Monitoring Options
JIT Monitoring Options

Mission Control and JVM Monitoring Tools
Monitoring with VisualVM
Monitoring with Mission Control

Java Flight Recorder
Creating Flight Recordings
Analyze a Flight Recording

Monitoring Operating System Performance
Monitoring CPU Usage
Monitoring Memory Usage
Monitoring Network I/O
Monitoring Disk I/O
Monitoring Processes

Performance Profiling Tools
Overview of Profiling Tools
CPU Profiling
Heap Profiling

Troubleshooting Performance Issues by Profiling
Memory Leak Profiling
Detecting Memory leaks
Dectecting Contention and Locking Issues

Garbage Collection Tuning
Tuning with Serial GC
Tuning with Parallel GC
Tuning with Concurrent GC
Tuning with G1 GC

Language Level Concerns and Garbage Collection
Object Allocation
Working with Large Objects
Explicit Garbage Collection
Finalizers
Memory Leak Detection Tools
Object References