Java Performance Tuning with Mission Control and Flight Recorder

Duration: 3 days; Instructor-led

WHAT YOU WILL LEARN

This Java Performance Tuning with Mission Control and Flight Recorder training helps you build a conceptual background for Java garbage collection. Expert Oracle University instructors will teach you how it it applies to Java garbage collectors on the Hotspot JVM, including the new 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

By investing in this course, you'll learn how Java garbage collection works and how it affects your applications. You'll develop the knowledge to select the appropriate garbage collector and performance goal for your applications. Furthermore, you'll know how to use the new Mission Control and Java Flight Recorder tools to monitor and analyze your applications.

Live Virtual Class format

A Live Virtual Class (LVC) is exclusively for registered students; unregistered individuals may not view an LVC at any time. Registered students must view the class from the country listed in the registration form. Unauthorized recording, copying, or transmission of LVC content may not be made.

AUDIENCE

- System Administrator
- Java Developers
- Support Engineer
- Technical Consultant
- Java EE Developers

PREREQUISITES
REQUIRED PREREQUISITES

- Java SE 7 Fundamentals
- Java SE7 Fundamentals

Suggested Prerequisites:

- Java SE 7 Programming
- Java SE 7 Develop Rich Client Applications
- Developing Applications for the Java EE 6 Platform
- Java SE 7 Programming
- Java SE 7: Develop Rich Client Applications
- Developing Applications for the Java EE 6 Platform

METHODOLOGY

This program will be conducted with interactive lectures, PowerPoint presentation, discussion and practical exercise.

COURSE OBJECTIVES

- 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
- Monitor operating system performance on Solaris, Linux, and Windows
- Profile the performance of a Java application
- Tune garbage collection in a Java application
- Apply basic performance tuning principles to a Java application

OUTLINES

Module 1 - Course Overview

- Introduce course

Module 2 - Java Virtual Machine and Performance Overview

- JVM Overview
- What is Performance?
- Performance Methodology

Module 3 - The JVM and Java Garbage Collection

- HotSpot GC Basics
- The GC Aging Process
- G1 GC

Module 4 - Java Garbage Collectors

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

Module 5 - Command Line JVM Monitoring

- GC Monitoring Options
- JIT Monitoring Options

Module 6 - Mission Control and JVM Monitoring Tools

- Monitoring with VisualVM
- Monitoring with Mission Control

Module 7 - Java Flight Recorder

- Creating Flight Recordings
- Analyze a Flight Recording

Module 8 - Monitoring Operating System Performance

- Monitoring CPU Usage
- Monitoring Memory Usage
- Monitoring Network I/O
- Monitoring Disk I/O
- Monitoring Processes

Module 9 - Performance Profiling Tools

- Overview of Profiling Tools
- CPU Profiling
- Heap Profiling

Module 10 - Troubleshooting Performance Issues by Profiling

- Memory Leak Profiling
- Detecting Memory leaks
- Dectecting Contention and Locking Issues

Module 11 - Garbage Collection Tuning

- Tuning with Serial GC
- Tuning with Parallel GC
- Tuning with Concurrent GC
- Tuning with G1 GC

Module 12 - Language Level Concerns and Garbage Collection

- Object Allocation
- Working with Large Objects
- Explicit Garbage Collection
- Finalizers
- Memory Leak Detection Tools
- Object References