Java Performance Tuning and Optimization

Duration: 3 Days

What you will learn

This Java Performance Tuning and Optimization training will teach you about performance tuning methodologies, performance tuning theories and practical tips to solve difficult performance problems for Java applications. Expert Oracle University instructors will help you expand your skills during a series of labs derived from real world performance tuning issues.

Learn To:

Set up a performance tuning environment.
Tune the performance of a Java application at the language level.
Monitor Java applications.
Apply rigor to the task of performance tuning.
Use various tools and mechanisms for monitoring, profiling and tuning Java applications.
Apply best practices for performance testing.
Tune garbage collection in a Java application.

Benefits to You

By enrolling in this course, you'll also learn to develop applications using the Java programming language. Expert Oracle instructors will teach you how to implement interfaces and handle Java programming exceptions, while using object-oriented programming techniques.

Audience

Architect
Java Developer
Java EE Developer
Support Engineer
Technical Consultant

Related Training

Required Prerequisites

Develop applications by using the Java programming language

Implement interfaces and handle Java programming exceptions

Use object-oriented programming techniques

Java Programming Language, Java SE 6

Copyright © 2013, Oracle. All rights reserved.

Suggested Prerequisites
Administer basic Windows, Linux or Solaris systems

Developing Applications With the Java SE 6 Platform

Fundamentals of the Java Programming Language, Java SE 6

Course Objectives

Apply basic performance tuning principles to a Java application

Monitor performance on Solaris, Linux and Windows at the OS/JVM/Application level

Profile the performance of a Java Application

Describe various garbage collection schemes

Course Topics

Introduction to Java Performance Tuning
Course Introduction
Course Agenda

JVM and Peformance Overview
JVM Overview
Performance Principles
Common Performance Problems
Performance Methodology
Development and Performance

Monitoring Operating System Performance
Monitor CPU Usage
Monitor Network I/O
Monitor Disk I/O
Monitor Virtual Memory Usage
Monitor and Identify Lock Contention

Monitoring the JVM
HotSpot Generational Garbage Collector
Monitor the Garbage Collector with Command Line Tools
Monitor the Garbage Collector with VisualVM
Monitor the JIT Compiler
Throughput and Responsiveness

Performance Profiling
NetBeans Profiler, Oracle Solaris Studio, and jmap/jhat
Profile CPU Usage
Profile JVM Heap
Find Memory Leaks

Copyright © 2013, Oracle. All rights reserved.

Identify Lock Contention
Heap Profiling Anti-patters
Method Profiling Anti-patterns

Garbage Collection Schemes
Garbage Collection
Generational Garbage Collection
GC Performance Metrics
Garbage Collection Algorithms
Types of Garbage Collectors
JVM Ergonomics

Garbage Collection Tuning
Tune the Garbage Collection
Select the Garbage Collector
Interpret GC Output

Language Level Concerns and Garbage Collection
The best practices for Object Allocation
Invoking the Garbage Collector
Reference Types in Java
The use of Finalizers

Performance Tuning at the Language Level
String-efficient Java Applications
Collection Classes
Using Threads
Using I/O Efficiently

Copyright © 2013, Oracle. All rights reserved.