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. Develop the skills to implement interfaces and handle Java programming exceptions, while using object-oriented programming techniques.

Audience
Architect
Java Developers
Java EE Developers
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

Suggested Prerequisites
Administer basic Windows, Linux or Solaris systems

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

**Garbage Collection Schemes**
Architect Enterprise Applications with Java EE

Duration: 5 Days

What you will learn

This Architect Enterprise Applications with Java EE training teaches you how to develop robust architectures for enterprise Java applications. Learn how to use Java Platform, Enterprise Edition (Java EE) technology.

Learn To:

Define the Enterprise Architect's roles, responsibilities and deliverables.
Identify non-functional requirements (NFRs) and describe common problems and solutions.
Translate business requirements into an architecture.
Weigh choices in architecting the client, web, business, integration and data tiers.
Apply various evaluation criteria to choosing architectural elements and patterns, tools, servers and frameworks.

Benefits to You

By enrolling in this course, you'll understand how Enterprise Java applications developed using the architecture as a guideline can accommodate rapid change and growth. Expert Oracle University instructors will help you explore the technical context of the Java EE and relevant technologies.

Strategies to Create Application Blueprints

You'll also learn the strategies needed to create application blueprints that work well when implementing Java EE technologies. These strategies include effective decision-making through the use of non-functional qualities (such as scalability and flexibility), Java EE technology blueprints and design patterns.

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
Architect
Developer
J2EE Developer
Java EE Developers

Related Training

Required Prerequisites
Describe distributed computing and communication concepts

Describe, in outline form, all Java EE technologies, including Enterprise JavaBeans, servlets, JavaServer Pages, and JavaServer Faces

Perform analysis and design of object-oriented software systems

Use a notation, such as the UML, for modeling object-oriented systems

Object-Oriented Analysis and Design Using UML

Suggested Prerequisites
Java Design Patterns

Java EE 7: Back-End Server Application Development  New

Java EE 7: Front-end Web Application Development  NEW

Course Objectives
Make good use of Java EE component technologies to solve typical problems in system architecture

Derive software systems using techniques outlined in the Java EE Blueprint and solutions defined in the Java EE Patterns

Address quality-of-service requirements in a cost-effective manner using engineering trade-off techniques

Describe the role of the architect and the products an architect delivers

List and describe typical problems associated with large-scale enterprise systems

Course Topics

Introducing Enterprise Architecture
What is Enterprise Architecture?
An Architect’s Roles and Responsibilities

Introducing Fundamental Architectural Concepts
Distinguish between architecture and design
Architectural Patterns
Architectural Deliverable Artifacts
What is an Enterprise Architecture Framework
4 + 1 View Model
Architectural Modeling Using UML
Architecture Workflow
What is an Enterprise Architecture Framework

Developing a Security Architecture
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