Free read Java virtual machine java series [PDF]

software programming languages written by the inventors of the technology the java virtual machine specification java se 8 edition is the definitive technical reference for the java virtual machine the book provides complete accurate and detailed coverage of the java virtual machine it fully describes the new features added in java se 8 including the invocation of default methods and the class file extensions for type annotations and method parameters the book also clarifies the interpretation of class file attributes and the rules of bytecode verification the origin of this book goes back to the dagstuhl seminar on logic for system engineering organized during the first week of march 1997 by s jiihnichen j loeckx and m wirsing during that seminar after egon borger s talk on how to use abstract state machines in software engineering wolfram schulte at the time a research assistant at the university of ulm germany questioned whether asms provide anything special as a scientifically well founded and rigorous yet simple and industrially viable framework for high level design and analysis of complex systems and for natural refinements of models to executable code wolfram schulte argued referring to his work with k achatz on a formal object oriented method inspired by fusion and object z 1 that with current techniques of functional programming and of axiomatic specification one can achieve the same result an intensive and long debate arose from this discussion at the end of the week it led egon borger to propose a collaboration on a real life specification project of wolfram schulte s choice as a comparative field test of purely functional declarative methods and of their enhancement within an integrated abstract state based operational asm approach after some hesitation in may 1997 wolfram schulte accepted the offer and chose as the theme a high level specification of java and of the java virtual machine the java virtual machine jvm is the underlying technology behind java s most distinctive features including size security and cross platform delivery this guide shows programmers how to write programs for the java virtual machine delve into jvm inner workings and explore internals memory management and performance optimization key features uncover the intricacies of jvm from class loading to garbage collection and more master jvm memory management for efficient resource use and reduced overhead apply jvm knowledge through case studies reinforcing your understanding of internals purchase of the print or kindle book includes a free pdf ebook book descriptionmastering the java virtual machine is a comprehensive guide that will take you into the heart of java programming guiding you through the intricate workings of the java virtual machine jvm and equipping you with essential skills to become a proficient java developer you ll start by understanding the jvm exploring its architecture and how it executes java code through detailed explanations and real world examples you ll gain a deep understanding of jvm internals enabling you to write efficient and optimized java applications as you progress you ll delve into memory management and execution unraveling the complexities of heap and stack management garbage collection and memory profiling you ll learn how memory is allocated and reclaimed in the jvm as well as how to optimize memory usage and identify performance bottlenecks in your applications with this knowledge you ll be able to create java programs that are not only robust but also highly performant by the end of this book you ll have the skills needed to excel in java programming writing efficient maintainable code what you will learn understand jvm architecture and bytecode execution explore memory management and optimize memory usage compare and evaluate alternative jvms like graalvm master reflection for dynamic behavior in java applications utilize java annotation processors for code generation get to grips with reactive programming principles for scalable applications who this book is for this book is for java developers seeking to deepen their expertise in the java virtual machine jvm and optimize java applications for peak performance it caters to both intermediate and seasoned professionals who want to explore specific aspects such as jvm internals memory management threading security and performance tuning written by the inventors of the technology the java virtual machine specification java se 7 edition is the definitive technical reference for the java virtual machine the book provides complete accurate and detailed coverage of the java virtual machine it fully describes the invokedynamic instruction and method handle mechanism added in java se 7 and gives the formal prolog specification of the type checking verifier introduced in java se 6 the book also includes the class file extensions for generics and annotations defined in java se 5 0 and aligns the instruction set and initialization rules with the java memory model the java virtual machine specification is the heart of java s portability its ability to run applets in various environments and under different operating systems 本書は プログラミ

ング言語javaを支えるjava仮想マシンという 仮想ハードウェアの動作を規定した原典となる文書である software programming languages peek under the hood of the complex but fascinating java virtual machine dive into the intricacies of jvm performance with jvm performance engineering the essential guide for seasoned java developers eager to demystify the jvm focusing on the openjdk hotspot vm this book provides insights into cutting edge java performance techniques and trends distinguished java champion monica beckwith blends theoretical insights and practical tools encompassing case studies applications use case diagrams and process flow charts to demonstrate diagnostic techniques performance methodologies and optimizations this manual is a portal to excelling in java performance engineering offering java developers system architects and software engineers the tools to foster career advancement and success with java applications examine the evolving java type system from lambda expressions to the advent of records and sealed classes and explore how project valhalla aims to further optimize performance leverage the unified jvm logging interface for enhanced diagnostics monitoring and performance testing featuring the novel asynchronous logging mechanism grasp the intricate relationship between jvm and hardware mastering end to end java performance optimization techniques gain deep insights into jvm s garbage collection and memory management examining the pivotal garbage first and z gcs and how they are shaping the java performance landscape explore efficient deployment strategies and techniques to accelerate jvm readiness leveraging class data sharing ahead of time compilation and innovations like graalvm and upcoming project leyden embark on an exploration of the synergy between the jvm and exotic hardware like gpus and fpgas and revel in the potential of project panama and tornadovm in high computational scenarios such as machine learning and data analytics look ahead to the future of java concurrency with virtual threads and investigate runtime optimizations of string handling and concurrency propelling java forward register your product for convenient access to downloads updates and or corrections as they become available see inside for details this ibm redbooks publication gives a broad understanding of a new 32 bit java virtual machine jvm in ibm i5 os with the arrival of this new jvm ibm system i platform now comfortably supports java and websphere applications on a wide array of different server models from entry size boxes to the huge enterprise systems this book provides in depth information about setting java and ibm websphere environments with new 32 bit jvm tuning its performance and monitoring or troubleshooting its runtime with the new set of tools information in this book helps system architects java application developers and system administrators in their work with 32 bit jvm in i5 os important despite the fact that this book targets i5 os implementation most information in this book applies to all ibm server platforms where the new 32 bit jvm is supported the java virtual machine is the underlying technology responsible for java s most distinctive features such as cross platform delivery small compiled code and its security capabilities along with the increasingly important runtime engines pervasive in our daily life computing there is a strong demand from the software community for a solid presentation on the design and implementation of modern virtual machines including the java virtual machine javascript engine and android execution engine the community expects to see not only formal algorithm description but also pragmatic code snippets to understand not only research topics but also engineering solutions this book meets these demands by providing a unique description that combines high level design with low level implementations and academic advanced topics with commercial solutions this book takes a holistic approach to the design of vm architecture with contents organized into a consistent framework introducing topics and algorithms in an easily understood step by step process it focuses on the critical aspects of vm design which are often overlooked in other works such as runtime helpers stack unwinding and native interface the algorithms are fully illustrated in figures and implemented in easy to digest code snippets making the abstract concepts tangible and programmable for system software developers explore the java virtual machine with modern programming languages about this book this guide provides in depth coverage of the java virtual machine and its features filled with practical examples this book will help you understand the core concepts of java scala clojure kotlin and groovy work with various programming paradigms and gain knowledge about imperative object oriented and functional programming who this book is for this book is meant for programmers who are interested in the java virtual machine jvm and want to learn more about the most popular programming languages that can be used for jvm development basic practical knowledge of a modern programming language that supports object oriented programming javascript python c vb net and c is assumed what you will learn gain practical information about the java virtual machine understand the popular jvm languages and the java class library get to know about various programming paradigms such as imperative object oriented and functional work with common jvm tools such as eclipse ide gradle and maven explore frameworks such as sparkjava vert x akka and javafx boost your knowledge about dialects of other well known programming languages that run on the jvm including javascript python and ruby in detail anyone who knows software development knows about the java virtual machine the java virtual machine is responsible for interpreting java byte code and translating it into actions in the beginning java was the only programming language used for the jvm but increasing complexity of the language and the remarkable performance of the jvm created an opening for a new generation of programming languages if you want to build a strong foundation with the java virtual machine and get started with popular modern programming languages then this book is for you the book will begin with a general introduction of the jvm and its features which are common to the jvm languages helping you get abreast with its concepts it will then dive into explaining languages such as java scala clojure kotlin and groovy and will show how to work with each language their features use cases and pros and cons by writing example projects in those languages and focusing on each language s strong points it will help you find the programming language that is most appropriate for your particular needs by the end of the book you will have written multiple programs that run on the java virtual machine and know about the differences between the various languages style and approach this practical example filled guide will help you get started with the jvm and some of its most popular languages this book is a collection of notes and sample codes written by the author while he was learning jvm himself topics include jvm java virtual machine architecture and components oracle jvm implementation hotspot eclipse jvm implementation eclipse openj9 java lang runtime the jvm instance class loading native libraries java lang system representing operating system java lang classloader loading class files java lang class class reflections runtime data areas heap memory and garbage collection stack frame and stack overflow multi threading impacts on cpu and i o cds class data sharing micro benchmark tests on different types of operations updated in 2024 version v5 13 with hotspot jvm 20 for latest updates and free sample chapters visit herongyang com jvm develop and manage robust java applications with oracle s high performance jrockit java virtual machine with this book and ebook includes complete decompiler source includes complete obfuscator source includes a comprehensive chapter on strategies for protecting your code covers the basic theory behind many of the decompilers and obfuscators available on the market this innovative book introduces the principles of computer organization and assembly language through the example of the java virtual machine a platform that is exceptionally convenient modern portable and nearly universally available using the jvm implementation as a foundation patrick juola gives an accessible and easy to understand explanation of digital logic and systems data representation machine organization architecture and the fundamentals of assembly language programming once readers thoroughly understand these core principles in the context of the jvm juola extends them to four other leading platforms the intel 8088 pentium 4 power architecture and the atmel avr microcontroller プロのプログラマを対象にしたjavaバーチャルマシンを徹底的に理解するための一冊です 実行速度 セキュリティ メモリ効率 動作の安定性 システムのトラブルシューティングなどが開発中のシステムで重要であれば javaバーチャルマシンを徹底的に理解することで より効率的な開発方法が得られるでしょう virtual machine technology applies the concept of virtualization to an entire machine circumventing real machine compatibility constraints and hardware resource constraints to enable a higher degree of software portability and flexibility virtual machines are rapidly becoming an essential element in computer system design they provide system security flexibility cross platform compatibility reliability and resource efficiency designed to solve problems in combining and using major computer system components virtual machine technologies play a key role in many disciplines including operating systems programming languages and computer architecture for example at the process level virtualizing technologies support dynamic program translation and platform independent network computing at the system level they support multiple operating system environments on the same hardware platform and in servers historically individual virtual machine techniques have been developed within the specific disciplines that employ them in some cases they aren t even referred to as virtual machines making it difficult to see their common underlying relationships in a cohesive way in this text smith and nair take a new approach by examining virtual machines as a unified discipline pulling together cross cutting technologies allows virtual machine implementations to be studied and engineered in a well structured manner topics include instruction set emulation dynamic program translation and optimization high level virtual machines including java and cli and system virtual machines for both single user systems and servers examines virtual machine technologies across the disciplines that use them operating systems programming languages and computer architecture defining a new and unified discipline reviewed by principle researchers at microsoft hp and by other industry research groups written by two authors who combine several decades of expertise in computer system research and development both in academia and industry explore the depths of the java virtual machine jvm and master the techniques for optimizing its performance with inside java virtual machine optimizing jvm performance this essential guide offers in depth knowledge from understanding the jvm architecture to advanced performance tuning strategies whether you re a software engineer system architect or performance analyst you ll benefit from detailed explanations about jvm internals garbage collection memory management jit compilation concurrency and much more discover practical tips and benchmarking practices to enhance your java applications efficiency and scalability the book outlines precise profiling and monitoring methods delving into the tools necessary to identify bottlenecks and improve performance systematically with cutting edge content on new jvm languages and features this book not only educates but also prepares you for future advancements inside java virtual machine optimizing jvm performance is the definitive resource for anyone aiming to deepen their understanding of jvm and leverage this knowledge to optimize application performance in professional environments equip yourself with the expertise needed to tackle real world performance challenges in the ever evolving java landscape the java programming language provides safety and security guarantees such as type safety and its security architecture they distinguish it from other mainstream programming languages like c and c in this work we develop a machine checked model of concurrent java and the java memory model and investigate the impact of concurrency on these guarantees from the formal model we automatically obtain an executable verified compiler to bytecode and a validated virtual machine this insider guide gives the understanding needed to write more effective code for java programs and get maximum performance from java applications both a tutorial and reference the book is easy to follow for java programmers at all levels readers learn what s going on underneath their java programs as they run and gain valuable insights into garbage collection techniques multithreading compilers bytecodes the java interpreter and more the accompanying cd rom contains numerous code examples as well as interactive illustrations that provide valuable programming insights the performance of software components depends on several factors including the execution platform on which the software components run to simplify cross platform performance prediction in relocation and sizing scenarios a novel approach is introduced in this thesis which separates the application performance profile from the platform performance profile the approach is evaluated using transparent instrumentation of java applications and with automated benchmarks for java virtual machines this ibm redbooks publication provides information about the new java virtual machine jvm server technology in ibm cics transaction server for z os v4 2 we begin by outlining the many advantages of its multi threaded operation over the pooled jvm function of earlier releases the open services gateway initiative osgi is described and we highlight the benefits osgi brings to both development and deployment details are then provided about how to configure and use the new jvm server environment examples are included of the deployment process which takes a java application from the workstation eclipse integrated development environment ide with the ibm cics explorer software development kit sdk plug in through the various stages up to execution in a stand alone cics region and an ibm cicsplex environment the book continues with a comparison between traditional cics programming and cics programming from java as a result the main functional areas of the java class library for cics jcics application programming interface api are extensively reviewed further chapters are provided to demonstrate interaction with structured data such as copybooks and how to access relational databases by using java database connectivity jdbc and structured query language for java sqlj finally we devote a chapter to the migration of applications from the pooled jvm model to the new jvm server run time java undoubtedly has its roots in embedded systems and the nevertheless it is a fully functional high level programming language that can provide users with a wide range of functionality and versatility this thoroughly cross reviewed state of the art survey is devoted to the study of the syntax and semantics of java from a formal methods point of view it consists of the following chapters by leading researchers formal grammar for java describing the semantics of java and proving type soundness proving java type soundness machine checking the java specification proving type safety an event based structural operational semantics of multi threaded java dynamic denotational semantics of java a programmer s reduction semantics for classes and mixins a formal specification of java virtual machine instructions for objects methods and subroutines the operational semantics of a java secure processor a programmer friendly modular definition of the semantics of java research on real time java technology has been prolific over the past decade leading to a large number of corresponding hardware and software solutions and frameworks for distributed and embedded real time java systems this book is aimed primarily at researchers in real time embedded systems particularly those who wish to understand the current state of the art in using java in this domain much of the work in real time distributed embedded and real time java has focused on the real time specification for java rtsj as the underlying base technology and consequently many of the chapters in this book address issues with or solve problems using this framework describes innovative techniques in scheduling memory management quality of service and communication systems supporting real time java applications includes coverage of multiprocessor embedded systems and parallel programming discusses state of the art resource management for embedded systems including java s real time garbage collection and parallel collectors considers hardware support for the execution of java programs including how programs can interact with functional accelerators includes coverage of safety critical java for development of safety critical embedded systems the definitive master class in performance tuning java applications if you love all the gory details this is the book for you james gosling creator of the java programming language improvements in the java platform and new multicore multiprocessor hardware have made it possible to dramatically improve the performance and scalability of java software javatm performance covers the latest oracle and third party tools for monitoring and measuring performance on a wide variety of hardware architectures and operating systems the authors present dozens of tips and tricks you ll find nowhere else you ll learn how to construct experiments that identify opportunities for optimization interpret the results and take effective action you ll also find powerful insights into microbenchmarking including how to avoid common mistakes that can mislead you into writing poorly performing software then building on this foundation you ll walk through optimizing the java hotspot vm standard and multitiered applications applications and more coverage includes taking a proactive approach to meeting application performance and scalability goals monitoring java performance at the os level in windows linux and oracle solaris environments using modern java virtual machine jvm and os observability tools to profile running systems with almost no performance penalty gaining under the hood knowledge of the java hotspot vm that can help you address most java performance issues integrating jvm level and application monitoring mastering java method and heap memory profiling tuning the java hotspot vm for startup memory footprint response time and latency determining when java applications require rework to meet performance goals systematically profiling and tuning performance in both java se and java ee applications optimizing the performance of the java hotspot vm using this book you can squeeze maximum performance and value from all your java applications no matter how complex they are what platforms they re running on or how long you ve been running them i love virtual machines vms and i have done for a long time if that makes me sad or an anorak so be it i love them because they are so much fun as well as being so useful they have an element of original sin writing assembly programs and being in control of an entire machine while still being able to claim that one is being a respectable member of the community being structured modular high level object oriented and so on they also allow one to design machines of one s own unencumbered by the restrictions of a starts optimising it for some physical particular processor at least until one processor or other i have been building virtual machines on and off since 1980 or there abouts it has always been something of a hobby for me it has also turned out to be a technique of great power and applicability i hope to continue working on them perhaps on some of the ideas outlined in the last chapter i certainly want to do some more work with register based vms and concur rency i originally wanted to write the book from a purely semantic viewpoint understand the internals and architecture of graalvm with the help of hands on experiments and gain deep knowledge that you can apply to improve your application s performance interoperability and throughput key featuresgenerate faster and leaner code with minimum computing resources for high performancecompile java applications faster than ever to a standalone executable called native imagescreate high performance polyglot applications that are compatible across various jvm and non jvm languagesbook description graalvm is a universal virtual machine that allows programmers to compile and run applications written in both jvm and non jvm languages it improves the performance and efficiency of applications making it an ideal companion for cloud native or microservices based applications this book is a hands on guide with step by step instructions on how to work with graalvm starting with a quick introduction to the graalvm architecture and how things work under the hood you ll discover the performance benefits of running your java applications on graalvm you ll then learn how to create native images and understand how aot ahead of time can improve application performance significantly the book covers examples of building polyglot applications that will help you explore the interoperability between languages running on the same vm you ll also see how you can use the truffle framework to implement any language of your choice to run optimally on graalvm by the end of this book you ll not only have learned how graalvm is beneficial in cloud native and microservices development but also how to leverage its capabilities to create high performing polyglot applications what you will learngain a solid understanding of graalvm and how it works under the hoodwork with graalvm s high performance optimizing compiler and see how it can be used in both jit just in time and aot ahead of time modesget to grips with the various optimizations that graalvm performs at runtimeuse advanced tools to analyze and diagnose performance issues in the codecompile embed run and interoperate between languages using truffle on graalvmbuild optimum microservices using popular frameworks such as micronaut and quarkus to create cloud native applicationswho this book is for this book is for jvm developers looking to optimize their application s performance you ll also find this book useful if you re a jvm developer looking to explore options to develop polyglot applications using tools from the python r ruby or node js ecosystem a solid understanding of software development concepts and prior experience working with programming languages is necessary to get started coding and testing are generally considered separate areas of expertise in this practical book java expert scott oaks takes the approach that anyone who works with java should be adept at understanding how code behaves in the java virtual machine including the tunings likely to help performance this updated second edition helps you gain in depth knowledge of java application performance using both the jvm and the java platform developers and performance engineers alike will learn a variety of features tools and processes for improving the way the java 8 and 11 lts releases perform while the emphasis is on production supported releases and features this book also features previews of exciting new technologies such as ahead of time compilation and experimental garbage collections understand how various java platforms and compilers affect performance learn how java garbage collection works apply four principles to obtain best results from performance testing use the jdk and other tools to learn how a java application is performing minimize the garbage collector s impact through tuning and programming practices tackle performance issues in java apis improve java driven database application performance

Inside the Java Virtual Machine

1998

software programming languages

The Java Virtual Machine Specification, Java SE 8 Edition

2014-05-03

written by the inventors of the technology the java virtual machine specification java se 8 edition is the definitive technical reference for the java virtual machine the book provides complete accurate and detailed coverage of the java virtual machine it fully describes the new features added in java se 8 including the invocation of default methods and the class file extensions for type annotations and method parameters the book also clarifies the interpretation of class file attributes and the rules of bytecode verification

Java and the Java Virtual Machine

2012-12-06

the origin of this book goes back to the dagstuhl seminar on logic for system engineering organized during the first week of march 1997 by s jiihnichen j loeckx and m wirsing during that seminar after egon borger s talk on how to use abstract state machines in software engineering wolfram schulte at the time a research assistant at the university of ulm germany questioned whether asms provide anything special as a scientifically well founded and rigorous yet simple and industrially viable framework for high level design and analysis of complex systems and for natural refinements of models to executable code wolfram schulte argued referring to his work with k achatz on a formal object oriented method inspired by fusion and object z 1 that with current techniques of functional programming and of axiomatic specification one can achieve the same result an intensive and long debate arose from this discussion at the end of the week it led egon borger to propose a collaboration on a real life specification project of wolfram schulte s choice as a comparative field test of purely functional declarative methods and of their enhancement within an integrated abstract state based operational asm approach after some hesitation in may 1997 wolfram schulte accepted the offer and chose as the theme a high level specification of java and of the java virtual machine

Programming for the Java Virtual Machine

1999

the java virtual machine jvm is the underlying technology behind java s most distinctive features including size security and cross platform delivery this guide shows programmers how to write programs for the java virtual machine

Mastering the Java Virtual Machine

2024-02-29

delve into jvm inner workings and explore internals memory management and performance optimization key features uncover the intricacies of jvm from class loading to garbage collection and more master jvm memory management for efficient resource use and reduced overhead apply jvm knowledge through case studies reinforcing your understanding of internals purchase of the print or kindle book includes a free pdf ebook book descriptionmastering the java virtual machine is a comprehensive guide that will take you into the heart of java programming guiding you through the intricate workings of the java virtual machine jvm and equipping you with essential skills to become a proficient java developer you ll start by understanding the jvm exploring its architecture and how it executes java code through detailed explanations and real world examples you ll gain a deep understanding of jvm internals enabling you to write efficient and optimized java applications as you progress you ll delve into memory management and execution unraveling the complexities of heap and stack management garbage collection and memory profiling you ll learn how memory is allocated and reclaimed in the jvm as well as how to optimize memory usage and identify performance bottlenecks in your applications with this knowledge you ll be able to create java programs that are not only robust but also highly performant by the end of this book you ll have the skills needed to excel in java programming writing efficient maintainable code what you will learn understand jvm architecture and bytecode execution explore memory management and optimize memory usage compare and evaluate alternative jvms like graalvm master reflection for dynamic behavior in java applications utilize java annotation processors for code generation get to grips with reactive programming principles for scalable applications who this book is for this book is for java developers seeking to deepen their expertise in the java virtual machine jvm and optimize java applications for peak performance it caters to both intermediate and seasoned professionals who want to explore specific aspects such as jvm internals memory management threading security and performance tuning

The Java Virtual Machine Specification, Java SE 7 Edition

2013-02-15

written by the inventors of the technology the java virtual machine specification java se 7 edition is the definitive technical reference for the java virtual machine the book provides complete accurate and detailed coverage of the java virtual machine it fully describes the invokedynamic instruction and method handle mechanism added in java se 7 and gives the formal prolog specification of the type checking verifier introduced in java se 6 the book also includes the class file extensions for generics and annotations defined in java se 5 0 and aligns the instruction set and initialization rules with the java memory model

The Java Virtual Machine Specification

1997

the java virtual machine specification is the heart of java s portability its ability to run applets in various environments and under different operating systems

*Java*仮想マシン仕様

2001-05

本書は プログラミング言語javaを支えるjava仮想マシンという 仮想ハードウェアの動作を規定した原典となる文書である

Java Virtual Machine

1997

software programming languages

Understanding Java Virtual Machine

2013

peek under the hood of the complex but fascinating java virtual machine dive into the intricacies of jvm performance with jvm performance engineering the essential guide for seasoned java developers eager to demystify the jvm focusing on the openjdk hotspot vm this book provides insights into cutting edge java performance techniques and trends distinguished java champion monica beckwith blends theoretical insights and practical tools encompassing case studies applications use case diagrams and process flow charts to demonstrate diagnostic techniques performance methodologies and optimizations this manual is a portal to excelling in java performance engineering offering java developers system architects and software engineers the tools to foster career advancement and success with java applications examine the evolving java type system from lambda expressions to the advent of records and sealed classes and explore how project valhalla aims to further optimize performance leverage the unified jvm logging interface for enhanced diagnostics monitoring and performance testing featuring the novel asynchronous logging mechanism grasp the intricate relationship between jvm and hardware mastering end to end java performance optimization techniques gain deep insights into jvm s garbage collection and memory management examining the pivotal garbage first and z gcs and how they are shaping the java performance landscape explore efficient deployment strategies and techniques to accelerate jvm readiness leveraging class data sharing ahead of time compilation and innovations like graalvm and upcoming project leyden embark on an exploration of the synergy between the jvm and exotic hardware like gpus and fpgas and revel in the potential of project panama and tornadovm in high computational scenarios such as machine learning and data analytics look ahead to the future of java concurrency with virtual threads and investigate runtime optimizations of string handling and concurrency propelling java forward register your product for convenient access to downloads updates and or corrections as they become available see inside for details

Extending a Java Virtual Machine to Dynamic Object-oriented Languages

2013

this ibm redbooks publication gives a broad understanding of a new 32 bit java virtual machine jvm in ibm i5 os with the arrival of this new jvm ibm system i platform now comfortably supports java and websphere applications on a wide array of different server models from entry size boxes to the huge enterprise systems this book provides in depth information about setting java and ibm websphere environments with new 32 bit jvm tuning its performance and monitoring or troubleshooting its runtime with the new set of tools information in this book helps system architects java application developers and system administrators in their work with 32 bit jvm in i5 os important despite the fact that this book targets i5 os implementation most information in this book applies to all ibm server platforms where the new 32 bit jvm is supported

JVM Performance Engineering

2024-05-03

the java virtual machine is the underlying technology responsible for java s most distinctive features such as cross platform delivery small compiled code and its security capabilities

IBM Technology for Java Virtual Machine in IBM i5/OS

2007-02-14

along with the increasingly important runtime engines pervasive in our daily life computing there is a strong demand from the software community for a solid presentation on the design and implementation of modern virtual machines including the java virtual machine javascript engine and android execution engine the community expects to see not only formal algorithm description but also pragmatic code snippets to understand not only research topics but also engineering solutions this book meets these demands by providing a unique description that combines high level design with low level implementations and academic advanced topics with commercial solutions this book takes a holistic approach to the design of vm architecture with contents organized into a consistent framework introducing topics and algorithms in an easily understood step by step process it focuses on the critical aspects of vm design which are often overlooked in other works such as runtime helpers stack unwinding and native interface the algorithms are fully illustrated in figures and implemented in easy to digest code snippets making the abstract concepts tangible and programmable for system software developers

The Java Virtual Machine Specification

2013

explore the java virtual machine with modern programming languages about this book this guide provides in depth coverage of the java virtual machine and its features filled with practical examples this book will help you understand the core concepts of java scala clojure kotlin and groovy work with various programming paradigms and gain knowledge about imperative object oriented and functional programming who this book is for this book is meant for programmers who are interested in the java virtual machine jvm and want to learn more about the most popular programming languages that can be used for jvm development basic practical knowledge of a modern programming language that supports object oriented programming javascript python c vb net and c is assumed what you will learn gain practical information about the java virtual machine understand the popular jvm languages and the java class library get to know about various programming paradigms such as imperative object oriented and functional work with common jvm tools such as eclipse ide gradle and maven explore frameworks such as sparkjava vert x akka and javafx boost your knowledge about dialects of other well known programming languages that run on the jvm including javascript python and ruby in detail anyone who knows software development knows about the java virtual machine the java virtual machine is responsible for interpreting java byte code and translating it into actions in the beginning java was the only programming language used for the jvm but increasing complexity of the language and the remarkable performance of the jvm created an opening for a new generation of programming languages if you want to build a strong foundation with the java virtual machine and get started with popular modern programming languages then this book is for you the book will begin with a general introduction of the jvm and its features which are common to the jvm languages helping you get abreast with its concepts it will then dive into explaining languages such as java scala clojure kotlin and groovy and will show how to work with each language their features use cases and pros and cons by writing example projects in those languages and focusing on each language s strong points it will help you find the programming language that is most appropriate for your particular needs by the end of the book you will have written multiple programs that run on the java virtual machine and know about the differences between the various languages style and approach this practical example filled guide will help you get started with the jvm and some of its most popular languages

Java kasō mashin shiyō

1997-12-25

this book is a collection of notes and sample codes written by the author while he was learning jvm himself topics include jvm java virtual machine architecture and components oracle jvm implementation hotspot eclipse jvm implementation eclipse openj9 java lang runtime the jvm instance class loading native libraries java lang system representing operating system java lang classloader loading class files java lang class class reflections runtime data areas heap memory and garbage collection stack frame and stack overflow multi threading impacts on cpu and i o cds class data sharing micro benchmark tests on different types of operations updated in 2024 version v5 13 with hotspot jvm 20 for latest updates and free sample chapters visit herongyang com jvm

Advanced Design and Implementation of Virtual Machines

2016-12-19

develop and manage robust java applications with oracle s high performance jrockit java virtual machine with this book and ebook

Introduction to JVM Languages

2017-06-28

includes complete decompiler source includes complete obfuscator source includes a comprehensive chapter on strategies for protecting your code covers the basic theory behind many of the decompilers and obfuscators available on the market

JVM Tutorials - Herong's Tutorial Examples

2020-10-10

this innovative book introduces the principles of computer organization and assembly language through the example of the java virtual machine a platform that is exceptionally convenient modern portable and nearly universally available using the jvm implementation as a foundation patrick juola gives an accessible and easy to understand explanation of digital logic and systems data representation machine organization architecture and the fundamentals of assembly language programming once readers thoroughly understand these core principles in the context of the jvm juola extends them to four other leading platforms the intel 8088 pentium 4 power architecture and the atmel avr microcontroller

Oracle Jrockit

2010-06-01

プロのプログラマを対象にしたjavaバーチャルマシンを徹底的に理解するための一冊です 実行速度 セキュリティ メモリ効率 動作の安定性 システムのトラブルシューティングなどが開発中のシステムで重要であれば javaバーチャルマシンを徹底的に理解することで より効率的な開発方法が得られるでしょう

Proceedings of the Java Virtual Machine Research and Technology Sy[m]posium (JVM '01)

2001

virtual machine technology applies the concept of virtualization to an entire machine circumventing real machine compatibility constraints and hardware resource constraints to enable a higher degree of software portability and flexibility virtual machines are rapidly becoming an essential element in computer system design they provide system security flexibility cross platform compatibility reliability and resource efficiency designed to solve problems in combining and using major computer system components virtual machine technologies play a key role in many disciplines including operating systems programming languages and computer architecture for example at the process level virtualizing technologies support dynamic program translation and platform independent network computing at the system level they support multiple operating system environments on the same hardware platform and in servers historically individual virtual machine techniques have been developed within the specific disciplines that employ them in some cases they aren t even referred to as virtual machines making it difficult to see their common underlying relationships in a cohesive way in this text smith and nair take a new approach by examining virtual machines as a unified discipline pulling together cross cutting technologies allows virtual machine implementations to be studied and engineered in a well structured manner topics include instruction set emulation dynamic program translation and optimization high level virtual machines including java and cli and system virtual machines for both single user systems and servers examines virtual machine technologies across the disciplines that use them operating systems programming languages and computer architecture defining a new and unified discipline reviewed by principle researchers at microsoft hp and by other industry research groups written by two authors who combine several decades of expertise in computer system research and development both in academia and industry

The Java® Virtual Machine Specification, Java SE 8 Edition

2014

explore the depths of the java virtual machine jvm and master the techniques for optimizing its performance with inside java virtual machine optimizing jvm performance this essential guide offers in depth knowledge from understanding the jvm architecture to advanced performance tuning strategies whether you re a software engineer system architect or performance analyst you ll benefit from detailed explanations about jvm internals garbage collection memory management jit compilation concurrency and much more discover practical tips and benchmarking practices to enhance your java applications efficiency and scalability the book outlines precise profiling and monitoring methods delving into the tools necessary to identify bottlenecks and improve performance systematically with cutting edge content on new jvm languages and features this book not only educates but also prepares you for future advancements inside java virtual machine optimizing jvm performance is the definitive resource for anyone aiming to deepen their understanding of jvm and leverage this knowledge to optimize application performance in professional environments equip yourself with the expertise needed to tackle real world performance challenges in the ever evolving java landscape

Decompiling Java

2004-07-23

the java programming language provides safety and security guarantees such as type safety and its security architecture they distinguish it from other mainstream programming languages like c and c in this work we develop a machine checked model of concurrent java and the java memory model and investigate the impact of concurrency on these guarantees from the formal model we automatically obtain an executable verified compiler to bytecode and a validated virtual machine

Principles of Computer Organization and Assembly Language

2007

this insider guide gives the understanding needed to write more effective code for java programs and get maximum performance from java applications both a tutorial and reference the book is easy to follow for java programmers at all levels readers learn what s going on underneath their java programs as they run and gain valuable insights into garbage collection techniques multithreading compilers bytecodes the java interpreter and more the accompanying cd rom contains numerous code examples as well as interactive illustrations that provide valuable programming insights

JAVAバーチャルマシン

1998-07

the performance of software components depends on several factors including the execution platform on which the software components run to simplify cross platform performance prediction in relocation and sizing scenarios a novel approach is introduced in this thesis which separates the application performance profile from the platform performance profile the approach is evaluated using transparent instrumentation of java applications and with automated benchmarks for java virtual machines

Virtual Machines

2005-07-12

this ibm redbooks publication provides information about the new java virtual machine jvm server technology in ibm cics transaction server for z os v4 2 we begin by outlining the many advantages of its multi threaded operation over the pooled jvm function of earlier releases the open services gateway initiative osgi is described and we highlight the benefits osgi brings to both development and deployment details are then provided about how to configure and use the new jvm server environment examples are included of the deployment process which takes a java application from the workstation eclipse integrated development environment ide with the ibm cics explorer software development kit sdk plug in through the various stages up to execution in a stand alone cics region and an ibm cicsplex environment the book continues with a comparison between traditional cics programming and cics programming from java as a result the main functional areas of the java class library for cics jcics application programming interface api are extensively reviewed further chapters are provided to demonstrate interaction with structured data such as copybooks and how to access relational databases by using java database connectivity jdbc and structured query language for java sqlj finally we devote a chapter to the migration of applications from the pooled jvm model to the new jvm server run time

Automatic Object Inlining in a Java Virtual Machine

2008

java undoubtedly has its roots in embedded systems and the nevertheless it is a fully functional high level programming language that can provide users with a wide range of functionality and versatility this thoroughly cross reviewed state of the art survey is devoted to the study of the syntax and semantics of java from a formal methods point of view it consists of the following chapters by leading researchers formal grammar for java describing the semantics of java and proving type soundness proving java type soundness machine checking the java specification proving type safety an event based structural operational semantics of multi threaded java dynamic denotational semantics of java a programmer s reduction semantics for classes and mixins a formal specification of java virtual machine instructions for objects methods and subroutines the operational semantics of a java secure processor a programmer friendly modular definition of the semantics of java

Inside Java Virtual Machine

2024-05-03

research on real time java technology has been prolific over the past decade leading to a large number of corresponding hardware and software solutions and frameworks for distributed and embedded real time java systems this book is aimed primarily at researchers in real time embedded systems particularly those who wish to understand the current state of the art in using java in this domain much of the work in real time distributed embedded and real time java has focused on the real time specification for java rtsj as the underlying base technology and consequently many of the chapters in this book address issues with or solve problems using this framework describes innovative techniques in scheduling memory management quality of service and communication systems supporting real time java applications includes coverage of multiprocessor embedded systems and parallel programming discusses state of the art resource management for embedded systems including java s real time garbage collection and parallel collectors considers hardware support for the execution of java programs including how programs can interact with functional accelerators includes coverage of safety critical java for development of safety critical embedded systems

Proceedings of the Java Virtual Machine Research and Technology Symposium

2002

the definitive master class in performance tuning java applications if you love all the gory details this is the book for you james gosling creator of the java programming language improvements in the java platform and new multicore multiprocessor hardware have made it possible to dramatically improve the performance and scalability of java software javatm performance covers the latest oracle and third party tools for monitoring and measuring performance on a wide variety of hardware architectures and operating systems the authors present dozens of tips and tricks you ll find nowhere else you ll learn how to construct experiments that identify opportunities for optimization interpret the results and take effective action you ll also find powerful insights into microbenchmarking including how to avoid common mistakes that can mislead you into writing poorly performing software then building on this foundation you ll walk through optimizing the java hotspot vm standard and multitiered applications applications and more coverage includes taking a proactive approach to meeting application performance and scalability goals monitoring java performance at the os level in windows linux and oracle solaris environments using modern java virtual machine jvm and os observability tools to profile running systems with almost no performance penalty gaining under the hood knowledge of the java hotspot vm that can help you address most java performance issues integrating jvm level and application monitoring mastering java method and heap memory profiling tuning the java hotspot vm for startup memory footprint response time and latency determining when java applications require rework to meet performance goals systematically profiling and tuning performance in both java se and java ee applications optimizing the performance of the java hotspot vm using this book you can squeeze maximum performance and value from all your java applications no matter how complex they are what platforms they re running on or how long you ve been running them

A Machine-Checked, Type-Safe Model of Java Concurrency

2014-06-04

i love virtual machines vms and i have done for a long time if that makes me sad or an anorak so be it i love them because they are so much fun as well as being so useful they have an element of original sin writing assembly programs and being in control of an entire machine while still being able to claim that one is being a respectable member of the community being structured modular high level object oriented and so on they also allow one to design machines of one s own unencumbered by the restrictions of a starts optimising it for some physical particular processor at least until one processor or other i have been building virtual machines on and off since 1980 or there abouts it has always been something of a hobby for me it has also turned out to be a technique of great power and applicability i hope to continue working on them perhaps on some of the ideas outlined in the last chapter i certainly want to do some more work with register based vms and concur rency i originally wanted to write the book from a purely semantic viewpoint

Inside Java2 Virtual Machine W/Cd

2000

understand the internals and architecture of graalvm with the help of hands on experiments and gain deep knowledge that you can apply to improve your application s performance interoperability and throughput key featuresgenerate faster and leaner code with minimum computing resources for high performancecompile java applications faster than ever to a standalone executable called native imagescreate high performance polyglot applications that are compatible across various jvm and non jvm languagesbook description graalvm is a universal virtual machine that allows programmers to compile and run applications written in both jvm and non jvm languages it improves the performance and efficiency of applications making it an ideal companion for cloud native or microservices based applications this book is a hands on guide with step by step instructions on how to work with graalvm starting with a quick introduction to the graalvm architecture and how things work under the hood you ll discover the performance benefits of running your java applications on graalvm you ll then learn how to create native images and understand how aot ahead of time can improve application performance significantly the book covers examples of building polyglot applications that will help you explore the interoperability between languages running on the same vm you ll also see how you can use the truffle framework to implement any language of your choice to run optimally on graalvm by the end of this book you ll not only have learned how graalvm is beneficial in cloud native and microservices development but also how to leverage its capabilities to create high performing polyglot applications what you will learngain a solid understanding of graalvm and how it works under the hoodwork with graalvm s high performance optimizing compiler and see how it can be used in both jit just in time and aot ahead of time modesget to grips with the various optimizations that graalvm performs at runtimeuse advanced tools to analyze and diagnose performance issues in the codecompile embed run and interoperate between languages using truffle on graalvmbuild optimum microservices using popular frameworks such as micronaut and quarkus to create cloud native applicationswho this book is for this book is for jvm developers looking to optimize their application s performance you ll also find this book useful if you re a jvm developer looking to explore options to develop polyglot applications using tools from the python r ruby or node js ecosystem a solid understanding of software development concepts and prior experience working with programming languages is necessary to get started

Quantifying and Predicting the Influence of Execution Platform on Software Component Performance

2014-09

coding and testing are generally considered separate areas of expertise in this practical book java expert scott oaks takes the approach that anyone who works with java should be adept at understanding how code behaves in the java virtual machine including the tunings likely to help performance this updated second edition helps you gain in depth knowledge of java application performance using both the jvm and the java platform developers and performance engineers alike will learn a variety of features tools and processes for improving the way the java 8 and 11 lts releases perform while the emphasis is on production supported releases and features this book also features previews of exciting new technologies such as ahead of time compilation and experimental garbage collections understand how various java platforms and compilers affect performance learn how java garbage collection works apply four principles to obtain best results from performance testing use the jdk and other tools to learn how a java application is performing minimize the garbage collector s impact through tuning and programming practices tackle performance issues in java apis improve java driven database application performance

Java virtual machine

1997-01

IBM CICS and the JVM server: Developing and Deploying Java Applications

2013-07-15

Formal Syntax and Semantics of Java

2003-07-31

Distributed, Embedded and Real-time Java Systems

2012-02-07

Java Performance

2011-10-04

A Machine-Checked, Type-Safe Model of Java Concurrency

2012

Virtual Machines

2010-05-17

Supercharge Your Applications with GraalVM

2021-08-10

Java Performance

2020-02-11

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