

CIW Java Programming

Current Blueprint (November 2002 Release)

This blueprint lists the following information for each course in the CIW Java Programming series for the November 2002 release. The series consists of two courses: Java Programming Fundamentals and the optional Sun Certified Java Programming Exam Preparation Guide.

- **Revision History:** Identifies changes in the course since the last release.
- **Outline:** Outline detailing the courseware headers, subheaders and exercises for the release of this course.
- **Software Spreadsheet:** Complete detail of required software purchases and free trial download acquisitions to implement this course.

Java Programming Fundamentals version 6.1

Revision History

Released November 2002 (version 6.1)

This release is considered a course enhancement. The main differences between this Java Programming Fundamentals v6.1 and the previous version (v6.07 released March 2002) are as follows:

- Applied new publishing template to course for more professional look and feel
- Entered errata (an error in writing or printing, including but not limited to spelling, style, and code errors)
- Added four Sun Java Platform 1.4 exam objectives to help prepare students for the latest release of the Sun Programmer exam. The course will now prepare students for both the 310-025 and 310-035 exams.

Released March 2002 (version 6.07)

This release was considered a course enhancement. The main differences between Java Programming Fundamentals v6.07 and the previous version (v5.07 released August 1, 2001) were as follows:

- Introduction of separate instructor and student guides
- Pre-assessment questions
- Instructor margin notes
- Enhanced Lesson Summary
- Instructor Section containing Optional Labs and Quizzes
- Syllabi (for Academic instructors) and Implementation Tables (for Learning Center instructors)

Released August 2001 (version 5.07)

The 5.07 revision of Java Programming Fundamentals replaced the 4.27 version that was released August 1, 2000. There were no significant changes to the Java Programming Fundamentals courseware, outlines or objectives from the August 2000 release. The main differences between this course and the earlier version of Java Programming Fundamentals (v4.27), released August 1, 2000, were as follows:

- Entered errata (an error in writing or printing, including but not limited to spelling, style, and code errors)

CIW Java Programming

Current Blueprint (November 2002 Release)

Outline

Lesson 1: Java Runtime Environment

- The Java Virtual Machine
- The Java 2 Software Development Kit
- Java Comments
- Lesson 1 Review Questions

Lesson 2: Data Types, Variables and Operators

- Data Types
- Declaring Variables
- Variable Scope
- Casting
- Operators
- Automatic Casting
- Lesson 2 Review Questions

Lesson 3: Control Statements

- Code Blocks
- Conditional Statements
- Iteration Statements (Loops)
- Lesson 3 Review Questions

Lesson 4: Methods

- Java Methods
- Return Statement
- Calling a Method
- Parameters
- Pass by Value
- Overloading
- Lesson 4 Review Questions

Lesson 5: Arrays

- What Is an Array?
- Initializing an Array
- Objects
- Using an Array
- Passing an Array to a Method
- Garbage Collection
- Command Line Parameters
- Lesson 5 Review Questions

CIW Java Programming

Current Blueprint (November 2002 Release)

Lesson 6: Classes and Objects

- Object-Oriented Programming
- What Is a Class?
- What Is an Object?
- Instance and Class Members
- Abstraction
- Object References
- Lesson 6 Review Questions

Lesson 7: Inheritance

- What Is Inheritance?
- Overriding Methods
- Overriding Methods and Variables
- Lesson 7 Review Questions

Lesson 8: Constructors

- What Is a Constructor?
- Using Constructors
- The Keyword this
- Constructor Process
- Constructors and Callbacks
- Strings and StringBuffer
- Lesson 8 Review Questions

Lesson 9: Interfaces and Abstract Classes

- What Is an Interface?
- Polymorphism
- What Is an Abstract Class?
- Lesson 9 Review Questions

Lesson 10: Packages and Access Modifiers

- Introduction to Packages and Access Modifiers
- Packages
- Access Modifiers
- Java 2 Application Programming Interface
- Encapsulation
- Lesson 10 Review Questions

Lesson 11: Swing Components

- What Is the AWT?
- What Is Swing?
- Swing Containers
- JavaBeans
- Lesson 11 Review Questions

Lesson 12: Layout Managers

- What Is a Layout Manager?
- FlowLayout
- GridLayout
- BorderLayout
- BoxLayout
- Combining Layouts
- Lesson 12 Review Questions

Lesson 13: Graphics

- Graphics Class
- Color Class
- Font Class
- Lesson 13 Review Questions

Lesson 14: The Delegation Model

- What Is an Event?
- JDK 1.0 Event Handling
- SDK 1.2 Event Handling
- Lesson 14 Review Questions

Lesson 15: Inner Classes

- What Is an Inner Class?
- Inner Classes for Event Handling
- Lesson 15 Review Questions

Lesson 16: Applets

- Programming Applets
- Applets and Web Browsers
- Converting an Application into an Applet
- Converting an Applet into an Application
- Lesson 16 Review Questions

Lesson 17: Exceptions

- What Is an Exception?
- Handling Exceptions
- Creating User-Defined Exceptions
- Exception Handling Tips
- Exceptions and Inheritance
- Lesson 17 Review Questions

Lesson 18: Creating Threads and Thread Methods

- What Are Threads?
- How Operating Systems Handle Multitasking
- Types of Threads in Java
- Creating Threads
- Thread Methods
- Lesson 18 Review Questions

CIW Java Programming

Current Blueprint (November 2002 Release)

Lesson 19: Synchronization

- What Is Thread Synchronization?
- Thread Racing
- Synchronized and the Object Monitor
- Thread Race Condition
- Sophisticated Thread Synchronization
- Stopping, Suspending and Resuming Threads
- Deadlocks
- Lesson 19 Review Questions

Lesson 20: Streams and Serialization

- What Is a Stream?
- InputStream, OutputStream, Reader and Writer
- Files
- Stream Classes of java.io.*
- Serialization
- Graduating Task: Building a simple word processor
- Lesson 20 Review Questions

Lesson 21: Networking

- What Is Networking?
- Connecting Computers Across the Internet
- Networking Classes of java.net.*
- The Java Client/Server Model
- Building the EchoServer
- Multithreading Your Client/Server Example
- Final Project: Building a client/server chat system
- Lesson 21 Review Questions

Appendix A: Java Resources on the Web

Appendix B: Works Cited

Glossary

Supplemental Disk Contents

Sun Certified Java Programmer Exam Preparation Guide v1.07 (optional)

Note: The Sun Certified Java Programmer Exam Preparation Guide v1.07 course will not change for the November 2002 release. Only the Java Programming Fundamentals course will change.

Revision History

Released August 2001 (version 1.07)

- This revision is the initial release of the Sun Certified Java Programmer Exam Preparation Guide. This preparation guide serves as a supplemental to Java Programming Fundamentals and will be included on the supplemental files CD. The guide covers certification objectives point-by-point to assist students in studying for and passing the Sun Certified Programmer for Java Platform exam.

Outline

Lesson 1: Java Language Fundamentals

- Java Source Files
- Keywords
- Primitive Data Types
- The Java *main* Method
- Variable Initialization
- The *Math* Class
- Garbage Collection

Lesson 2: Java Modifiers

- Introduction to Java Modifiers
- Classes
- Methods
- Variables
- Static Initializers

Lesson 3: Flow Control in Java

- The *while* Loop
- The *do* Loop
- The *for* Loop
- The *continue* Statement
- The *break* Statement
- The *if/else* Statement
- The *switch* Statement
- Exceptions
- Throwing Exceptions
- Catching Exceptions

CIW Java Programming

Current Blueprint (November 2002 Release)

Lesson 4: Operators and Assignments

- Introduction to Expressions
- Unary Operators
- Arithmetic Operators
- Binary Shift Operators
- Comparison Operators
- Short-Circuit Operators
- Ternary Operator
- Assignment Operators

Lesson 5: Object Orientation

- Encapsulation
- Abstraction
- Method Overloading
- Method Overriding
- Constructors
- Inner Classes
- Arrays

Lesson 6: Threads

- Creating Threads
- Thread States
- Thread Synchronization

Lesson 7: The java.awt package

- Layout Managers
- Events

Lesson 8: The Collections API

- Introduction to Collections
- The Collections API
- Using the Collections API

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CIW Series - Released November 2002	Java Programming Fundamentals (v6.1) CIW Software	Purchase	Location of Free Trial <i>Note: All software must be properly licensed before classroom implementation.</i>
	Operating Systems		
Java Programming Series	Windows ME, Windows 2000, or Redhat Linux 7.0	www.microsoft.com www.redhat.com	A free distribution of Redhat Linux v7.0 is available at http://www.redhat.com .
	Software		
Java Programming Series	Netscape Communicator 6.0 or later	www.netscape.com	A free downloadable version of Netscape Communicator 6.0 Professional is available at: http://www.netscape.com/computing/download/index.html/
Java Programming Series	Sun Java 2 Software Development Kit, Standard Edition, version 1.2 or later.	java.sun.com	A free downloadable version of Sun Microsystem Java Development Kit 2.0 is available at: http://java.sun.com/products/jdk/1.2/download-windows.html .

CIW Java Programming
Current Blueprint (November 2002 Release)

CIW Series – Released August 2001	Sun Certified Java Programmer Exam Preparation Guide (v1.07) CIW Software	Purchase	Location of Free Trial <i>Note: All software must be properly licensed before classroom implementation.</i>
	Operating Systems		
Java Programming Series	Windows ME, Windows 2000, or Redhat Linux 7.0	www.microsoft.com www.redhat.com	A free distribution of Redhat Linux v7.0 is available at http://www.redhat.com.
	Software		
Java Programming Series	Netscape Communicator 4.7 or later	www.netscape.com	A free downloadable version of Netscape Communicator 4.7 Professional is available at: http://www.netscape.com/computing/download/index.html/
Java Programming Series	Sun Java 2 Software Development Kit, Standard Edition, version 1.2 or later.	java.sun.com	A free downloadable version of Sun Microsystem Java Development Kit 2.0 is available at: http://java.sun.com/products/jdk/1.2/download-windows.html.