JV002: Java Programming Language

Duration: *5 Day(s)*

Course Overview

This course emphasizes becoming productive quickly as a Java™ application developer. This course quickly covers the Java language syntax and then moves into the object-oriented features of the language. Students will then use several of the provided API packages, such as I/O streams, collections, Swing GUI programming, threads, and accessing a database with JDBC. This course is current to Java 7 and uses the Eclipse IDE.

Review this course online at https://www.alta3.com/courses/JV002

Objectives

- Design and implement Java applications using Eclipse IDE.
- Understand Java language syntax and object-oriented programming features.
- Utilize Java API packages including I/O streams, collections, and JDBC.
- Develop GUI applications with Swing and manage concurrent processes using threads.

Who Should Attend

- Programmers moving to Java
- Software Engineers
- Application Developers
- C, C++, or C# Developers transitioning to Java

Prerequisites

• Professional programming experience in C, C++ or C# is required.

• Knowledge of Object-Oriented concepts is required.

Course Outline

Course Introduction

1. Course Objectives
2. Course Overview
3. Using the Workbook
4. Suggested References

Getting Started with Java

5. What is Java?
6. How to Get Java
7. A First Java Program
8. Compiling and Interpreting Applications
9. The JSDK Directory Structure

Eclipse

10. Introduction to Eclipse
11. Installing Eclipse
12. Running Eclipse for the First Time
13. Editors, Views, and Perspectives
14. Setting up a Project
15. Creating a New Java Application
16. Running a Java Application
17. Debugging a Java Application
18. Importing Existing Java Code into Eclipse

Language Fundamentals

19. A Java Program
20. If Statements
21. Switch Statements
22. Loop Statements
23. Syntax Details
24. Primitive Datatypes
25. Variables
26. Expressions in Java
27. Strings
28. Arrays
29. Enhanced for Loop

Objects and Classes

30. Defining a Class
31. Creating an Object
32. Instance Data and Class Data
33. Methods
34. Constructors
35. Access Modifiers
36. Encapsulation

Using Java Objects

37. Printing to the Console
38. print Format Strings
39. StringBuilder and StringBuffer
40. Methods and Messages
41. toString
42. Parameter Passing

43. Comparing and Identifying Objects
44. Destroying Objects
45. The Primitive-Type Wrapper Classes
46. Enumerated Types

Inheritance in Java

47. Inheritance
48. Inheritance in Java
49. Casting
50. Method Overriding
51. Polymorphism
52. super
53. The Object Class

Advanced Inheritance and Generics

54. Abstract Classes
55. Interfaces
56. Using Interfaces
57. Collections
58. Generics
59. Comparable

Packages

60. Packages
61. The import Statement
62. Static Imports
63. CLASSPATH and Import
64. Defining Packages
65. Package Scope

Exception Handling

66. Exceptions Overview
67. Catching Exceptions
68. The finally Block
69. Exception Methods
70. Declaring Exceptions
71. Defining and Throwing Exceptions
72. Errors and RuntimeExceptions

Input/Output Streams

73. Overview of Streams
74. Bytes vs. Characters
75. Converting Byte Streams to Character Streams
76. File Object
77. Binary Input and Output
78. PrintWriter Class
79. Reading and Writing Objects
80. Closing Streams

Core Collection Classes

81. The Collections Framework
82. The Set Interface
83. Set Implementation Classes
84. The List Interface
85. List Implementation Classes
86. The Queue Interface
87. Queue Implementation Classes
88. The Map Interface
89. Map Implementation Classes

Collection Sorting and Tuning

90. Sorting with Comparable
91. Sorting with Comparator
92. Sorting Lists and Arrays
93. Collections Utility Methods
94. Tuning ArrayList
95. Tuning HashMap and HashSet

Inner Classes

96. Inner Classes
97. Member Classes
98. Local Classes
99. Anonymous Classes
100. Instance Initializers
101. Static Nested Classes

Introduction to Swing

102. AWT and Swing

103. Displaying a Window
104. GUI Programming in Java
105. Handling Events
106. Arranging Components
107. A Scrollable Component
108. Configuring Components
109. Menus
110. Using the JFileChooser

Swing Events and Layout Managers

111. The Java Event Delegation Model
112. Action Events
113. List Selection Events
114. Mouse Events
115. Layout Managers
116. BorderLayout
117. FlowLayout
118. GridLayout
119. BoxLayout
120. Box
121. JTabbedPane

Introduction to JDBC

122. The JDBC Connectivity Model
123. Database Programming
124. Connecting to the Database
125. Creating a SQL Query
126. Getting the Results
127. Updating Database Data
128. Finishing Up

JDBC SQL Programming

129. Error Checking and the SQLException Class
130. The SQLWarning Class
131. JDBC Types
132. Executing SQL Queries
133. ResultSetMetaData
134. Executing SQL Updates
135. Using a PreparedStatement
136. Parameterized Statements
137. Stored Procedures

138. Transaction Management

Introduction to Threads

139. Non-Threaded Applications
140. Threaded Applications
141. Creating Threads
142. Thread States
143. Runnable Threads
144. Coordinating Threads
145. Interrupting Threads
146. Runnable Interface

Thread Synchronization and Concurrency

147. Race Conditions
148. Synchronized Methods
149. Deadlocks
150. Synchronized Blocks
151. Thread Communication — wait()
152. Thread Communication — notify()
153. Java 5.0 Concurrency Improvements
154. Thread-Aware Collections
155. Executor
156. Callable