Java Essentials Using RAD 7.5

Course Summary

Description

This course will introduce the student to the Java programming language using IBM RAD 7.5. Through hands-on exercises, the student will become familiar with the Java syntax and the object oriented approach that this language utilizes. It is based on the new Java 1.5

Objectives

At the end of this course, students will be able to:

- Use the desired RAD 7.5 proficiently
- Understand the Java language syntax
- Create, compile, run and debug Java applications
- Manage the Java files
- Translate a class diagram into Java code (and vice-versa)
- Use the Collections framework
- Use the Java API

Topics

- Basic Java syntax (data types, operators, control statement)
- Object-oriented programming in Java
- UML notation - Class Diagram
- Using Collections Framework
- Using Exceptions
- Navigating Sun's API documentation
- Generics and Collections Framework
- Varargs

Audience

This course is designed for new Java programmers who have not previously programmed in an object-oriented language. The course can also run in RAD, Java EE Galileo Eclipse, WebLogic Workshop, and JDeveloper.

Prerequisites

The student must be familiar object oriented programming and with basic programming concepts with prior programming experience in at least one language (COBOL, Visual Basic, C, etc.).

Duration

Five days

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Course Outline

I. Overview of the Course
- A. Java keyword: package
- B. The Lab Disk
- C. The Labs
- D. File Hierarchy of Eclipse Based IDE
- E. Mapping the Lab Disk with the IDE
- F. Notations

II. Overview of RAD 7.5
- A. Rational Software Development Paltform
- B. Java Development
- C. JEE Development
- D. Supported Technologies
- E. File Hierarchy in RAD 7.5
- F. Terminologies
- G. Workspace
- H. View
- I. Editor

III. First Java Application
- A. Class Declaration Syntax
- B. Java Application
- C. First Java Application
- D. Using the Source Code
- E. Comments

IV. Variables
- A. Variables
- B. Legal Identifiers
- C. Reserved Words
- D. Declaring Variables
- E. Terminologies
- F. Primitive Data Types
- G. Integers
- H. Floating Point
- I. Character
- J. boolean
- K. Assignment and Conversion
- L. Strings

V. Operators
- A. Arithmetic Operators
- B. String Operators
- C. Assignment Operator
- D. Relational Operators
- E. Increment/Decrement Operators
- F. Logical Operators
- G. Boolean Operators
- H. Logical Not

VI. Flow of Control
- A. Organizing Statements
- B. Control Flow Statements
- C. The if-then Statement
- D. The if-then-else Statement
- E. The if-then-if else Statement
- F. Ternary Operator
- G. The while Statement
- H. The do-while Statement
- I. The for Statement
- J. The break keyword
- K. The switch statement
- L. The continue keyword

VII. Classes' vs. Objects
- A. What is an Object?
- B. What is a Class?
- C. Classes
- D. Revisiting: Class Declaration Syntax
- E. What are the Attributes of a Class?
- F. Attribute Definition Syntax
- G. Attributes of PartTime Class
- H. Revisiting: Class Declaration Syntax
- I. Methods of a Class
- J. Method Definition Syntax
- K. Signature of the Method
- L. Overloading a Method
- M. Methods of PartTime Class
- N. Classes vs Object
- O. The this keyword
- P. In Variable
- Q. In Method
- R. The static keyword
- S. In Variable
- T. In Method

VIII. Constructors
- A. Revisiting: Class Declaration Syntax
- B. Constructors
- C. Constructor Declaration Syntax
- D. Constructors of PartTime Class
- E. Invoking the Constructors

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Course Outline (cont'd)

F. Revisiting: The this keyword
G. In Constructors

IX. Arrays
A. Arrays Defined
B. Array Variable Syntax
C. Primitive Data Types
D. Object Data Types
E. Shortcut
F. Referencing the Array
G. Exceptions in Arrays
H. Arrays of Array

X. Inheritance
A. Inheritance
B. Revisiting: Class Declaration Syntax
C. The extends Keyword
D. The super keyword
E. In Constructors
F. In a Variable
G. In a Method
H. The final keyword
I. In a Variable
J. In a Method
K. In a Class

XI. Polymorphism
A. Polymorphism
B. Revisiting: Reference Variables

XII. Encapsulation
A. Encapsulation
B. Applying Encapsulation
C. Access Modifiers
D. The package keyword
E. Using the package keyword
F. The import keyword

XIII. Abstraction
A. Abstraction
B. The abstract Keyword
C. In Method
D. In Class
E. Interface
F. Interface Declaration Syntax
G. Revisiting: Class Declaration Syntax
H. Using an Interface

XIV. Exception Handling
A. What is an Exception?
B. How it Works
C. Exception Hierarchy
D. Error and Exception
E. Exception Class
F. Types of Exception
G. How to Handle Exception
H. Constructing an Exception Handler
I. The try block
J. The catch block
K. The finally block
L. Throwing an Exception
M. Create and Use Your Own Exception
N. Chained Exception

XV. Navigating the Java API
A. Java API
B. Instance Method
C. Class Method
D. The String Class
E. The Math Class
F. The StringBuilder Class
G. The Wrapper Classes
H. Boxing and Autoboxing

XVI. Enumerations
A. Enumeration
B. Enumeration Declaration Syntax
C. Using an Enumeration
D. Advantages of Enumeration

XVII. Generics and Collection Framework
A. Generics
B. Why Generics
C. Class Declaration Syntax: Using Generics
D. Using Parameterized Type Class
E. Collections
F. What is the Collection Framework?
G. The import keyword
H. To Traverse a Collection
I. Revisiting: For Each Loop

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Course Outline (cont'd)

J. Collection Interfaces
K. Collection Classes
L. Priority Queue
M. Vector
N. ArrayList
O. LinkedList
P. Iterator
Q. HashSet
R. TreeSet
S. TreeMap

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