



Course 321 – Comprehensive Introduction to Java Programming

Duration: 5 days

You Will Learn How To

- Write, compile, and execute a Java program using the Eclipse IDE
- Create programs that make use of Object-Oriented Programming concepts such as inheritance and polymorphism
- Create simple GUI applications using Swing
- Use Java's exception handling framework
- Write parallel-processing applications through multi-threading
- Read and write data using streams
- Access databases using JDBC

Course Benefits

This course provides extensive experience with the Java language and its object-oriented features. In this course, you will use Java to create text-based and GUI applications. Updated to cover the Java 8 platform, this program will benefit professionals who wish to take the Oracle Certified Java Programmer certification.

Who Should Attend

This Java Training course is for organizations and individuals who are looking for ways to create robust, object-oriented applications using Java technology. Prior structured programming experience is required.

Course Content

The Java Platform

- What is Java?
- Java Virtual Machine
- Java Development Process
- Java SE, EE, and ME

Java Development Overview

- Writing Your First Java Application
- Compiling and Running Java Programs
- The Eclipse IDE

Java Language Fundamentals

- Elements of a Java Program
- Identifiers
- Literals and Data Types
- Operators

Getting User Input

- Using Scanner
- Using JOptionPane

Control Flow Structures

- Decision Control – if, if-else, switch
- Repetition Control – for, while, do-while
- Transfer of Control – continue, break

Java Arrays

- Declaring Arrays
- Creating Arrays
- Accessing Array Elements

- Determining the Number of Elements in an Array
- Creating Multi-Dimensional Arrays

Object Oriented Programming Concepts

- Basic OOP Concepts
- Understanding Classes
- Declaring Object References
- Creating Objects
- Accessing Methods
- Accessing Static Methods
- Accessing Attributes
- Passing by Value vs Reference
Comparing Objects

Creating Your Own Classes

- Declaring Classes
- Declaring Attributes
- Declaring Methods
- The this reference
- Method overloading
- Constructors
- Finalizers
- Creating enum Types
- Importing and Creating Packages

Advanced Object-Oriented Programming

- Reusing Code by Inheritance
Creating Abstract classes
- Creating Abstract Methods
- Creating Final Classes
- Creating Final Methods
- Creating Final Attributes
- Declaring and implementing Interfaces
- Understanding Polymorphism
- Member Visibility – private, protected, public

Exception Handling

- Defining Exceptions
- Catching Exceptions using try-catch
- Understanding the finally Block
- Throwing Exceptions
- Creating Your Own Exception Types

Essential Java Classes

- The Object Class
- The Math Class
- String and StringBuilder
- Wrapper Classes
- The System Class
- Using ArrayList
- Using HashMap
- Generics
- Generating Random Numbers
- Formatting Numbers
- Formatting Dates

Creating Desktop Applications with Swing

- Swing Containers
- Visual Components
- Laying Out using Layout Managers

Event Handling

- The Event Delegation Model
- Handling Various Types of User Input
- Event Adapters
- Inner Classes and Anonymous Inner Classes
- Lambda Functional Interfaces

Multi-Threading

- Creating Threads
- Controlling Threads
- Understanding Thread Priorities
- Avoiding Race Conditions



- Thread Synchronization

Accessing Files and Streams

- Reading and Writing Binary Data
- Reading and Writing Character Data
- Manipulating Files and Directories
- Reading from The Keyboard
- Random Access Files

Accessing Databases Using JDBC

- Components of a JDBC application
- Connecting to a Database
- Retrieving and Processing Data
- Preventing SQL Injection Using PreparedStatement
- Inserting, Updating, and Deleting Data

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