
Introduction to Java with Eclipse

Summary

This course will introduce the student to the Java programming language, and will include a solid introduction to object-oriented programming techniques. Students will learn how to build, compile and test Java applications using the Eclipse IDE. This course reinforces the concepts taught with numerous daily labs that demonstrate real world solutions to real world problems. Students will leave this course with a solid understanding of Java syntax, object-oriented programming concepts and a working knowledge of the Eclipse IDE.

Duration

40 Hours of Lecture and Lab

Prerequisites

The student should have experience with at least one high level programming language. (C,C++,Cobol,Pascal,Visual Basic,etc.)

Topics

Java Overview

- What is Java?
- Java vs. JavaScript
- Java vs. C++
- Platform Independence
- History of Java

Java Variables

- Variable Declarations
- Primitive DataTypes vs Object Types
- Reserved Words
- Casting
- Naming Conventions

Operators

- Mathematical Operators
- Operator Shortcuts
- Comparison Operators
- Boolean Operators
- Order of Operations

Flow of Control

- Blocks
- If, Else If, Else
- Looping
- Switch Statement

Methods

- Parameters and Arguments
- Return Types
- Method Overloading
- Varargs

Object-Oriented Programming

- What is Object-Oriented Programming?
- The Problems Solved by OOP
- What is an Object?
- Objects vs. Classes
- Abstraction
- Encapsulation
- Inheritance
- Polymorphism
- Constructors
- Creating an equals() Method
- Reference vs. Value
- Abstract Classes
- Interfaces

JavaDoc

- Using the Java API Documentation
- Creating Custom JavaDocs
- JavaDoc Comments

Wrapper Classes

- What are Wrapper Classes?
- Boxing
- Unboxing
- Autoboxing and Autounboxing
- Wrapper Class Utility Methods

Arrays, Collections and Generics

- Java Arrays
- For Each Loop and Arrays
- The Java Collections API
- List, Set, Map and Queue
- Vector, ArrayList, Stack and LinkedList
- Generics and Type Safety

Exception Handling

- Exceptions vs. Errors
- Java Exception Terminology
- Try, Catch and Finally
- Checked Exceptions vs. Runtime Exceptions
- Understanding the Stack Trace
- Creating Custom Exceptions
- Using the Finally Block

JDBC

- What is JDBC?
- JDBC Drivers
- Statements
- PreparedStatement
- CallableStatements
- Working with ResultSets
- JDBC Best Practices