

Introduction to Java Programming

Length:

5 Days

Description:

This course presents an overview of the Java programming language, including file I/O threads. In order to build a solid foundation for Java Development, an introduction to object-oriented programming is also presented.

Course Objectives:

- Upon completion of this course, you will be able to:
- Understand the basic frame work of the Java programming environment
- Create basic Java applications
- Create multithreaded programs
- Use the File I/O classe s
- Work with and create our own Exceptions
- Use javadoc to generate documentation
- Understand basics of using the AWT to create graphical applications

Audience:

The audience for this course includes development managers as well as programmers.

Prerequisites:

The audience for this course is programmers. This course contains the prerequisite material for developers interested in creating and maintaining systems written in Java.

Course Contents:**Chapter 1 – About this Course**

This chapter introduces the objectives and contents of the course.

Chapter 2 – Introduction to the Java Language

A general overview to the Java language and its main functions.

2.1 - Objectives

2.2 – The Java Language and the Web

2.3 – What is the Java Language?

2.4 - The Java Virtual Machine

2.5 – The Java Interpreter

2.6 – Java Utilities

2.7 – Java IDEs

Chapter 3 – The Minimum Java Application

First look at Java code.

- 3.1 – Objectives
- 3.2 – A basic Java Application
- 3.3 – HelloWorldApp Described
- 3.4 – Lab 1: Build a Basic Application
- 3.5 – Java Extensions and Environment Variables
- 3.6 – Troubleshooting the Compilation

Chapter 4 – The Minimum Java Application

First look at Java code for the Web.

- 4.1 - Objectives
- 4.2 – A Basic Java Applet
- 4.3 – Importing Classes
- 4.4 – The Applet Class
- 4.5 – extends Keyword
- 4.6 – Applet Methods
- 4.7 – Compiling an Applet
- 4.8 – Calling an Applet
- 4.9 – Testing an Applet
- 4.10 – General Debugging
- 4.11 – Lab 2: Build a Basic Applet

Chapter 5 - Basic Java Constructs

The Java Language contains many programming constructs similar to the C language. This chapter provides a general overview of the constructs available and the general syntax required for each construct.

- 5.1 – Objectives
- 5.2 – Java Programming Overview
- 5.3 – Variables
- 5.4 – Lab 3: Work with Variables
- 5.5 – Arrays
- 5.6 – Lab 4: Work with Basic Arrays
- 5.7 – Operators
- 5.8 – Branching Statements
- 5.9 – Lab 5: Work with if and switch Statements
- 5.10 – Looping Statements
- 5.11 – Lab 6: Command Line Arguments
- 5.12 – Lab 7: Temperature Converter, Work with for, do and while Statements

5.13 – Bonus Lab 8: Prompting the user

Chapter 6 – Object Concepts in the Java Language

This chapter explains basic object-oriented concepts. The chapter also covers some real-world examples.

6.1 – Topics

6.2 – Basic Concepts

6.3 – Variables

6.4 – Instance Methods

6.5 – Lab 9: Basic Objects

6.6 – Constructors

6.7 – Lab 10: Constructors

6.8 – Static (Class) variables and methods

6.9 – Lab 11: Class Members

6.10 – Data Hiding

6.11 – Lab 12: Data Hiding

6.12 – Inheritance

6.13 – Lab 13: Inheritance

Chapter 7 – Exceptions

Exceptions provide the Java programmer with a method for catching errors. This chapter explains both the predefined and user-defined exceptions.

7.1 - Lab 14: Exceptions

Chapter 8 – Packages

How to package your application.

8.1 – Classpath

8.2 – Packaging

8.3 – Scope

8.4 – Lab 15: Place your classes in a package

Chapter 9 – Composition

This chapter explores some of the useful classes beyond the basic classes.

9.1 – String

9.2 – java.lang.StringBuffer

9.3 – Wrapper classes

9.4 – java.util.StringTokenizer

9.5 – java.util.Vector

9.6 – java.util.HashTable

9.7 – java.util.Properties

9.8 – java.util.Date

- 9.9 – java.util.Locale
- 9.10 – java.util.GregorianCalendar
- 9.11 – java.text.DateFormat
- 9.12 – java.text.NumberFormat
- 9.13 - Lab 16: Formatting Numbers and Dates

Chapter 10 – Abstract and Interface Classes

This chapter explores some of the useful classes beyond the basic classes.

- 10.1 – Abstract Methods & Classes
- 10.2 – Lab 17: Making your Pet class abstract
- 10.3 – Interfaces
- 10.4 – Lab 18: Write a Database
- 10.5 – Composition with Interfaces
- 10.6 - Clone

Chapter 11 – Introduction to Threads and Multithreading

Threads are a complex topic, but this chapter explains threading as it relates to Java in a straightforward manner.

- 11.1 – Objectives
- 11.2 - Threads

Chapter 12 – AWT

This chapter takes a first look at the Java classes for creating a graphical presence to your application or applet.

- 12.1 – Objectives
- 12.2 – The java.awt Package
- 12.3 – Container and Component
- 12.4 – Adding Components to Container
- 12.5 – Frame
- 12.6 – Creating a Simple Frame
- 12.7 – Panel
- 12.8 – Creating Panels
- 12.9 – Buttons
- 12.10 – Other Button Types
- 12.11 – Choice Buttons
- 12.12 – Labels
- 12.13 – TextFields
- 12.14 – Container Layouts
- 12.15 – Layout Managers
- 12.16 – FlowLayout Manager

- 12.17 – BorderLayout Manager
- 12.18 – GridLayout Manager
- 12.19 – GridBagLayout Manager
- 12.20 – CardLayout Manager
- 12.21 – Setting the Layout Manager to null
- 12.22 – Lab 19 – Create the PetGui class
- 12.23 – The Event Model
- 12.24 – Event Handling
- 12.25 – Event Objects
- 12.26 – Listening for Events
- 12.27 – Registering a Listener
- 12.28 – Using Adapters
- 12.29 – Event Sources
- 12.30 – Improving Things with the Inner Classes
- 12.31 – Lab 20 – Event handling for you PetGui
- 12.32 – Fonts & Colors
- 12.33 – Component methods – repaint(), update(), & paint()

Chapter 13 – Introduction to Input / Output

This chapter explains the basic process of access files using Java classes.

- 13.1 – Topics
- 13.2 – File
- 13.3 – RandomAccessFile
- 13.4 – Data input & output
- 13.5 – Serialization
- 13.6 – Object input and output
- 13.7 – Readers & Writers
- 13.8 – InputStreamReader
- 13.9 – Sysin, Sysout & Syserr
- 13.10 – Lab 21: Make your Pets have Persistence

Chapter 14 – Tools

This chapter explores some of the useful tools such as javadoc.

- 14.1 – Topics
- 14.2 – java.exe
- 14.3 – javac.exe
- 14.4 – jar.exe
- 14.5 – Lab 22: Archive you application
- 14.6 – javadoc

14.7 –Lab 23: Document your application

Chapter 15 – Introduction to Object-Orientation and UML

The goals of this chapter are to introduce you to Object-Oriented Analysis and Design concepts, briefly show you some UML, expose you to Design Patterns and discuss a couple of the more common patterns.

15.1 – Topics

15.2 – Object-Oriented Analysis and Design

15.3 – Object-Oriented Methodology

15.4 – Iteration

15.5 – Notation - UML

15.6 – An Object-Oriented Process

15.7 – Overview of UML

15.8 – Introduction to Patterns

15.9 – Types of Design Pattern

15.10 – Creational Patterns

15.11 – Structural Patterns

15.12 – Behavioral Patterns

15.13 – The JavaBean Pattern

15.14 –Properties

15.15 –Get and Set Methods

15.16 –The Abstract Factory Pattern

15.17 –THE ADAPTER PATTERN

15.18 –Object Adapters

15.19 –Class Adapters

15.20 –The State Pattern