



Java Programming for Non-Programmers Course (equivalent to SL 110) - 36 Contact Hours

Course Overview

The Fundamentals of the Java Programming Language course provides students with an excellent choice for beginning to learn to program using the Java programming language. This course is intended for students with little or no programming experience. This course teaches the significance of object-oriented programming, the keywords and constructs of the Java programming language, and the steps required to create simple Java programs. A fantastic new teaching tool developed by Sun is used throughout the course to help the learner more readily understand the syntax and semantics of the language. Students taking this course can receive a solid basis in the Java programming language upon which to base continued work and training.

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

- Explain key concepts related to Java technology and Java programming, identify Java product groups, and list the phases of the application development lifecycle
- Analyze a problem and design classes to solve the problem
- Develop and test a Java technology program
- Use primitive data types to store data within variables
- Demonstrate object-oriented reuse principles through the use of object references
- Use decision constructs
- Create loops
- Develop and use methods
- Implement encapsulation and constructors
- Create and use single and multi-dimensional arrays
- Use inheritance to extend classes

Prerequisites

- Working knowledge of programming concepts

Course Outline

Java Fundamentals
The origin of Java
Java's contribution to the Internet
Java's magic: The bytecode
The Java Buzzwords
Object oriented Programming
A first simple program
Handling Syntax Errors



A second simple program

Another Data type

Project 1-1: Converting Gallons to Liters

Project 1-2: Improving the Gallons-to-Liters Converter

Introducing Data Types and Operators

Why Data Types are important

Java's Simple Types

Floating-point Types

Characters

The Boolean type

Project 2-1: How far away is Lightning?

Project 2-2: Display a truth table of the logical operators

Program Control Statements

Input characters from the keyboard

The if statement

The switch statement

Project 3-1: Start Building a Java help system

Project 3-2: Improve the Java help system

Project 3-3: Finish the Java help system

Introducing Classes, Objects and Methods

Class Fundamentals

How Objects are created

Reference Variables and Assignment

Methods

Project 4-1: Creating a help class

Project 4-2: Demonstrate Finalization

More Data Types and Operators

Arrays

Project 5-1: Sorting an Array

Project 5-2: A Queue Array

Project 5-3: A ShowBits class

A Closer look at Methods and Classes

Controlling Access to Class members

Project 6-1: Improving the Queue Class

Project 6-2: Overloading the Queue constructor

Project 6-3: The Quicksort



Inheritance

Inheritance Basics

Constructor and Inheritance

Using super to Access Superclass members

Project 7-1: Extending the vehicle class member

Packages and Interfaces

Packages

Packages and Member Access

Importing Packages

Java's class Library Is contained in Packages

Interfaces

Project 8-1: Creating a Queue package

Exception Handling

The Exception Hierarchy

Exception Handling Fundamentals

Using Multiple catch Statements

Try blocks Can be Nested

Throwing an Exception

A closer look at throwable

Using finally

Using throws

Java's Built-in Exceptions

Creating Exception Subclasses

Project 9-1: Adding Exceptions to the Queue class

Using I/O

Java's I/O is built upon Streams

Using the Byte Streams

Reading and Writing Files using Byte Streams

Project 10-1: A File comparison Utility

Project 10-2: Creating a Disk-based Help System

Multithreaded Programming

Multithreading Fundamentals

The Thread Class and Runnable Interface

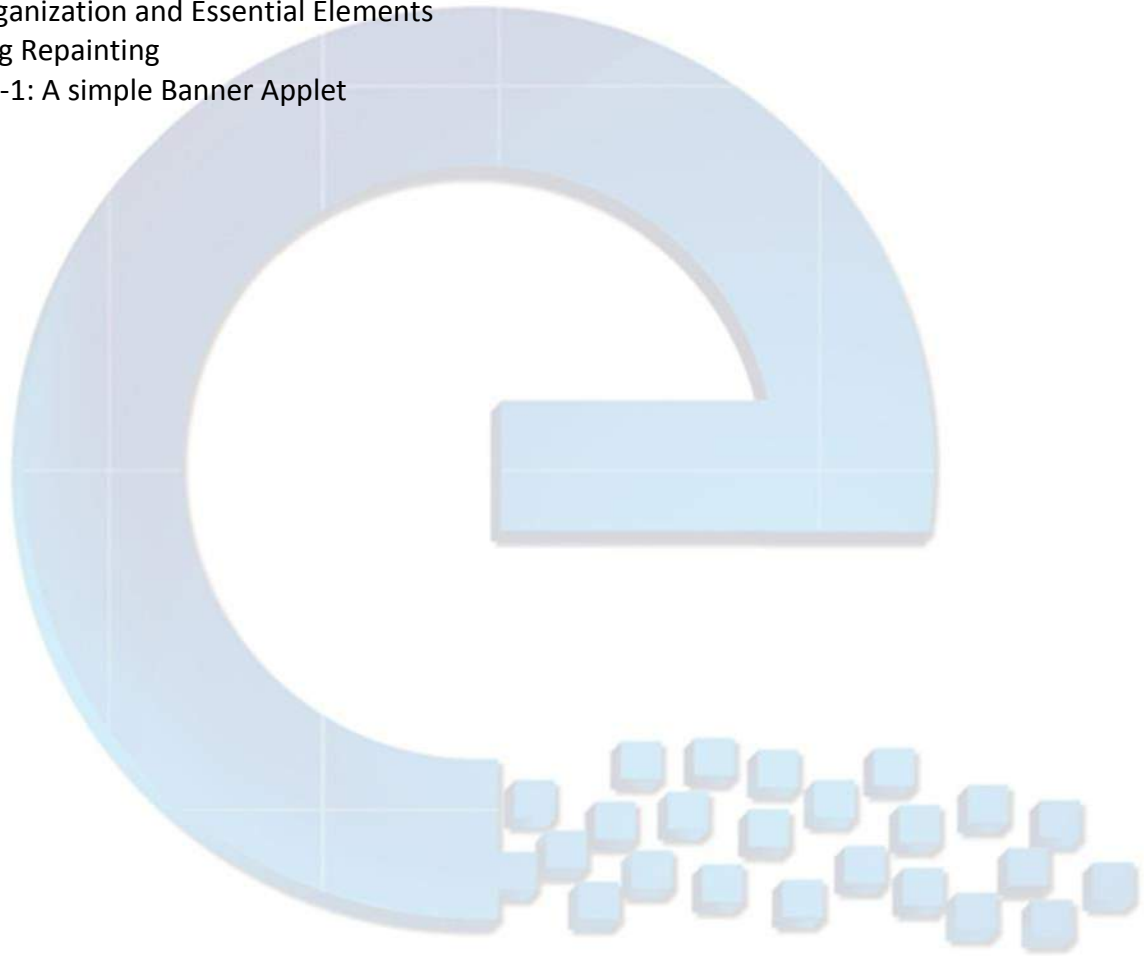
Creating a Thread

Project 11-1: Extending Thread

Project 11-2: Using the Main Thread



Applets, Events and Miscellaneous Topics
Applet Basics
Applet Organization and Essential Elements
Requesting Repainting
Project 12-1: A simple Banner Applet



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