

Java Programming Language

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Introduction

Course Objectives
Organization of the Book



Course Objectives

Upon completing the course, you will understand

- Java applications and applets
- Primitive data types
- Java control flow
- Methods
- Object-oriented programming
- Core Java classes (Swing, exception, internationalization, multithreading, multimedia, I/O, networking)

Course Objectives, cont.

- You will be able to
 - Write applications and applets
 - Develop a GUI interface
 - Write interesting projects
 - Establish a firm foundation on Java concepts



Book Chapters

Part I: Fundamentals of Programming

- Chapter 1: Introduction to Java
- Chapter 2: Primitive Data Types and Operations
- Chapter 3: Control Statements
- Chapter 4: Methods



Book Chapters, cont.
Part II: Object-Oriented Programming

- Chapter 5: Programming with Objects and Classes
- Chapter 6: Class Inheritance
- Chapter 7: Arrays and Vectors



Book Chapters, cont.Part III: Graphics Programming

- Chapter 8: Getting Started with Graphics
 Programming
- Chapter 9. Creating User Interfaces
- Chapter 10. Applets and Advanced Graphics

Book Chapters, cont.
 Part IV: Developing Comprehensive Projects

- Chapter 11. Exception Handling
- Chapter 12. Internationalization
- Chapter 13. Multithreading
- Chapter 14. Multimedia
- Chapter 15. Input and Output
- Chapter 16. Networking



Chapter 1: Introduction to Java

- Course Objectives
- The What Is Java?
- Getting Started With Java Programming
 Compiling and Running a Java Application
 Compiling and Running a Java Applet



What Is Java?

The History

Characteristics of Java



History

- James Gosling
- Oak project
- Java, May 20, 1995, Sun World
- 🖙 HotJava

The first Java-enabled Web browser

- Java version
 - JDK 1.1, 1.2, 1.3, 1.4beta
- Java conference
 - JavaOne



Characteristics of Java

- Java is simple
- Java is object-oriented
- Java is distributed
- Java is interpreted
- 🕗 Java is robust
- Java is secure
- Java is architecture-neutral
- Java is portable
- Java's performance
- Java is multithreaded
- Java is dynamic



JDK Versions

JDK 1.02 (1995)
JDK 1.1 (1996)
Java 2 SDK v 1.2 (JDK 1.2, 1998)
Java 2 SDK v 1.3 (JDK 1.2, 2000)
Java 2 SDK v.13.1
Java 2 SDK v.1.4beta



Java IDE Tools

- Borland's JBuilder (RAD)
 http://www.borland.com/jbuilder/
- Microsoft Visual J++
 - http://msdn.microsoft.com/visualj/
- Tisual Café (RAD)
 - http://www.webgain.com/products/visual_cafe/
- Jfactor by Rouge Wave
 - http://www.rougewave.com

Java IDE Tools

- Sun Java Forte (IDE)
 - http://www.sun.com/forte/ffj/
- IBM Visual Age for Java (RAD)
 - http://www-3.ibm.com/software/ad/vajava/



Getting Started with Java Programming

- A Simple Java Application
 Compiling Programs
 Executing Applications
 A Simple Java Applet
- Viewing Java Applets
- Applications vs. Applets



A Simple Application

Example 1.1

```
//This application program prints Welcome
//to Java!
public class Welcome
{
    public static void main(String[] args)
    {
        System.out.println("Welcome to Java!");
    }
}
```

Compiling Programs





Executing Applications

On command line - java classname



Example

Using TextPad





Using TextPad





Commandline execution: javac Welcome.java

_ 🗆 × 🖾 Command Prompt D:\PJspring2002\book\ch01> D:\PJspring2002\book\ch01> D:\PJspring2002\book\ch01>dir Volume in drive D is PKBACK# 001 Volume Serial Number is 1BF5-2E22 Directory of D:\PJspring2002\book\ch01 02/17/2001 08:56p <DIR> (DIR) 02/17/2001 08:56p 08/29/2001 Ø8:16p 256 WelcomeApplet.java 06/11/2001 07:52p 462 WelcomeApplet.html 08/29/2001 08:06p 125 Welcome.java 08/29/2001 Ø8:12p 146 FirstJava.java 01/17/2002 01:38p 92 tp025419.BAT 01/17/2002 01:40p 424 Welcome.class 6 File(s) 1,505 bytes 2 Dir(s) 52,254,720 bytes free D:\PJspring2002\book\ch01>javac_Welcome.java D:\PJspring2002\book\ch01>java Welcome Velcome to Java! D:\PJspring2002\book\ch01>_ •

A Simple Applet (Optional)

Example 1.2

{

```
/* This is an example of Java applets */
import java.awt.Graphics;
```

```
public class WelcomeApplet
  extends java.applet.Applet
```

```
public void paint (Graphics g)
```

```
g.drawString("Welcome to
Java!",10,10);
```

Creating an HTML File

WelcomeApplet.html

```
<html>
<body>
<applet code="WelcomeApplet.class"
width = 100 height = 40>
</applet>
</body>
</html>
```

Viewing Java Applets



Applet Viewer Utility

appletviewer htmlfile.html

Example: appletviewer WelcomeApplet.html



Security Restrictions on Applets

- Applets are not allowed to read from, or write to, the file system of the computer viewing the applets.
- Applets are not allowed to run any programs on the browser's computer.
- Applets are not allowed to establish connections between the user's computer and another computer except with the server where the applets are stored.

Author's supplemental materials

Web site:

http://www.cs.armstrong.edu/liang/intro3e.ht ml

- Inclusions:
 - Interactive Self Test
 - Solutions to even-numbered programming exercises
 - Example source code
- How to obtain, install, set path for Java 1.3, and compile and execute Java codes
 - http://www.cs.armstrong.edu/liang/intro3e/installjdk13.
 html