

# Using and Developing JavaBeans (4 Days)

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## Using and Developing JavaBeans (CTI 096)

*Java, developed at Sun Microsystems, is a robust, object-oriented, dynamic programming language which can be used to develop Web-based applets and standalone applications. A software component model called JavaBeans has evolved from Java and is intended primarily for intra-process purposes. In this class, students will investigate how JavaBeans provides all the necessary behaviors of software component architecture, like introspection, event handling, and persistence. Students will learn how to develop both visual and non-visual JavaBeans components for use in GUI or processing applications.*

*Prerequisites: Introductory level experience with the Java language is required. The ability to compose classes, work with interfaces, and write simple GUI applications is assumed. Experience with threads and networking is preferred but not required.*

*Minimum software requirements: Microsoft Windows 98 or NT 3.5 or later, UNIX OS supporting a JVM, or Macintosh System 7.5 or later; Netscape Navigator 4.0 or other Java-compatible browser; Sun's JDK 1.1 or higher. Java Developer's Kit version 1.4, Beans Development Kit, version 1.1 or higher.*

*Minimum hardware requirements: A Java2-capable PC or workstation per student.*

*Microsoft PowerPoint and Internet access on instructor's workstation for presentation purposes.*

### Module 1: The JavaBeans Component Model

- Overview
- Role of a Bean
- Life of a Bean
- Properties
- Methods
- Events
- Beans Standards in Other APIs

### Module 2: Builder Tools and the BeanBox

- The BeanBox
- Design-time vs. Run-time
- JARs, Manifests Identifying Beans
- Adding Beans to a GUI
- Binding Properties
- Connecting via Events
- Using Non-Visual Beans
- Saving Boxes of Beans

### Module 3: Developing Software Using Beans

- Procuring Beans
- Finding Out About a Bean
- Exercising Beans
- Beans in Applications
- Generating an Applet

### Module 4: Implementing JavaBeans

- Defining Properties
- Firing Events
- Defining Event Handlers
- JARring the Bean
- Testing in the BeanBox
- Bound Properties
- Vetoable Properties
- Bean Serialization

### Module 5: Events in JavaBeans

- Review of Java Event Model
- Defining a Custom Event Class
- Defining a Listener Interface
- Implementing Event Source Behavior
- Implementing an Event Handler
- Events in the BeanBox
- Generated Event Handlers – Some Sleuthing
- Generated Connections in an Applet

### Module 6: Introspection

- Introspection – Who Needs It?
- Reflection – Summary
- Instantiating a Bean
- The Introspection Process
- BeanInfo
- Automatic Analysis

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## **Module 7: Providing BeanInfo**

- Custom Profiles Using BeanInfo
- Associating an Icon with a Bean
- Simplifying the List of Methods
- Feature Descriptors
- Supporting Non-Standard Names
- Additional BeanInfo

## **Module 8: Customization**

- Property Sheets
- Property Editors
- Connection Using Property Views
- Implementing a Property Editor
- Customizers
- The Bean Descriptor
- Implementing a Customizer

## **Appendix A: References**

## **Appendix B: Quick Reference: Beans Naming Conventions**