

Developing Web Applications Using Rational Application Developer v6.0

Course Summary

Description

This course teaches students how to use IBM Rational Application Developer (RAD) v6.0 for J2EE development of web applications. The course focus is on teaching students how to use the tool to implement J2EE web components, not on the underlying J2EE technology. After completing this course, students will feel comfortable using the RAD v6.0 integrated development environment tools to develop J2EE applications utilizing JavaServer Pages, servlets, and JavaBeans, JavaServer Faces and Struts components. The concepts taught in this course are reinforced by hands-on lab exercises.

Topics

- RAD Concepts
- RAD: The java Perspective
- RAD: Debug Perspective
- Application Assembly and Packaging
- RAD: Web Perspective
- RAD: Server Perspective
- RAD: Page Designer Basics
- RAD: Data Perspective
- Servlet Event Listeners
- Servlet Filters
- RAD: Web Site Designer
- Struts Overview
- RAD: Struts
- JSF Basics
- RAD: page Designer Advanced Features
- RAD: Junit
- RAD: Component Test
- RAD: Code Review
- Deploying the WebSphere
- RAD: Profiling Tools
- Defining Security Settings
- WebSphere Portal Server Introduction

Prerequisites

Students should have Java programming experience, server-side development experience and familiarity with HTML. Students must be able to develop JSPs, servlets, and simple Java classes without assistance using another development environment.

Duration

Five days

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Course Outline

- I. RAD Concepts**
 - A. Workbench Features and Supported Standards
 - B. Eclipse, Workbench, Workspaces and Perspectives
 - C. Enabling Roles and Capabilities
 - D. Creating Projects and Setting Project Properties
 - E. Building Projects and Defining Dependencies
 - F. Adding Application Components
 - G. Using Editors and Views
 - H. View Toolbars and Fast Views
 - I. Customizing Perspectives and Creating User Defined Perspectives
 - J. Navigating the Workspace and Using Bookmarks
 - K. Using the Tasks and Search Views
 - L. Getting Help and Using Cheat Sheets
- II. RAD: The Java Perspective**
 - A. Creating Packages and Classes
 - B. Java Editor Features
 - C. Pop-up Outlines and Folding
 - D. Code and Content Assist
 - E. Import Assistance and Refactoring
 - F. Generating, Overriding and Implementing Methods
 - G. Quick Fix Capabilities
 - H. Using the Declaration, Problems and Console Views
 - I. Outline Options and Source Actions
 - J. Productivity Tips and Keyboard Shortcuts
- III. RAD: Debug Perspective**
 - A. Debug Options and Views
 - B. Line Breakpoints, Exception Breakpoints, Method Breakpoints and Watchpoints
 - C. Breakpoint Properties: Defining Conditional Breakpoints and Hit Counts
 - D. Debug Actions
 - E. Step-by-Step Debugging
 - F. Debugging JSPs
 - G. Remote Debugging
- IV. Application Assembly and Packaging**
 - A. J2EE Deployable Units
 - B. Assembly Process
 - C. J2EE Modules
 - D. Assembling J2EE Applications
 - E. Packaging Checklist
 - F. Deployment Descriptor Elements (EJB, Web, Connector, Client and Application)
 - G. IBM Extensions and Bindings
- V. RAD: Web Perspective**
 - A. Creating Web Projects and Adding Web Project Features
 - B. Annotation-based Programming
 - C. Web Project Structure and Default Files
 - D. Creating Servlets
 - E. Using the Properties View
 - F. Editing the Web Deployment Descriptor (web.xml)
 - G. Defining IBM Extensions and Bindings (ibm-web-bnd.xmi and ibm-web-ext.xmi)
- VI. RAD: Server Perspective**
 - A. Test Environment Installation
 - B. Server Types
 - C. Creating a Server and Server Configuration
 - D. Running Applications on a Server
 - E. Defining the Target Server
 - F. Servers View and Actions
 - G. Editing the Server Configuration for WebSphere V5
 - H. Editing the Server Configuration for WebSphere V6
 - I. Embedding Server Configuration Data in an Application (WebSphere V6)
 - J. Reloading Resources Running on the Server
 - K. Server Profiles
 - L. Creating Profiles
- VII. RAD: Page Designer Basics**
 - A. Page Designer Toolbars and Views
 - B. Creating a JSP
 - C. JSP Models: Struts, Portlet and Struts Portlet
 - D. Using and Customizing the Palette View
 - E. Adding Basic HTML Tags, Tables and Form Tags
 - F. Inserting JavaBeans and Standard JSP Tags
 - G. Defining Styles and Editing Style Sheets
- VIII. RAD: Data Perspective**
 - A. Using the Database Explorer
 - B. Creating and Connecting to a Database
 - C. Using the Database Definitions View
 - D. Defining Schemas, Tables and Views
 - E. Generating DDL and Deploying From RAD
 - F. Using the DB Output and SQL Scrapbook Views

Due to the nature of this material, this document refers to numerous hardware and software products by their trade names. References to other companies and their products are for informational purposes only, and all trademarks are the properties of their respective companies. It is not the intent of ProTech Professional Technical Services, Inc. to use any of these names generically

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Course Outline (cont'd)

IX. Servlet Event Listeners

- A. Implementing and Deploying Listeners
- B. Implementing the ServletContextListener Interface
- C. The ServletContextAttributeListener Interface
- D. Responding to HttpSessionEvents
- E. The HttpSessionAttributeListener and ServletRequestAttributeListener Interfaces
- F. Session Activation and Binding Listeners
- G. Receiving ServletRequest Notifications
- H. Thread Considerations

X. Servlet Filters

- A. The Filter Interface
- B. Filter Deployment and Lifecycle
- C. Performing Filtering Tasks
- D. Filter Chain Invocation
- E. Wrapping Requests and Responses
- F. Accessing the Filter Configuration Object
- G. Implementing the Destroy() Method

XI. RAD: Web Site Designer

- A. Web Site Designer Features and Views
- B. Adding Pages to a Web Site
- C. Defining Web Site Structure
- D. Creating and Applying Page Templates
- E. Providing Web Site Navigation: Bars, Tabs, Trails and Site Maps
- F. Recommendations and Limitations

XII. Struts Overview

- A. MVC and Struts
- B. Model Components
- C. View Components
- D. Custom Tags
- E. Struts HTML Tags
- F. Struts Bean Tags
- G. Struts Logic Tags
- H. Controller Components: ActionServlet, ActionMapping, ActionForm and Action
- I. Strengths and Weaknesses

XIII. RAD: Struts

- A. Configuring Struts Support
- B. Creating Struts Modules
- C. Adding Struts Components
- D. Using the Web Diagram Editor and Struts Explorer
- E. Configuring Actions, Action Mappings, Forwards, Exceptions and Form Beans
- F.

- G. Configuring Data Sources, Controller Attributes, Message Resources and Plug-ins
- H. Struts Preferences

XIV. JSF Basics

- A. JSF Architecture
- B. JSF Application Components
- C. Development Steps
- D. UI Component Model
- E. Page Development
- F. HTML UI Components and Faces Client Components
- G. Navigation Model, Navigation Rules and Navigation Cases
- H. Binding, Developing and Declaring Backing Beans
- I. Faces Request Life Cycle

XV. RAD: Page Designer Advanced Features

- A. Page Properties
- B. HTML Syntax Validation and Document Cleanup
- C. Scripting Variables
- D. Using Content Assist and the Quick Edit View
- E. Using and Customizing the Snippets View
- F. JavaServer Faces Support
- G. Creating a Faces JSP
- H. Added JSF Components
- I. Using the Page Data and Client Data Views

XVI. RAD: JUnit

- A. RAD Testing Support
- B. Adding JUnit to the Workspace
- C. Creating JUnit Test Cases and Suites
- D. Running JUnit Tests
- E. Using the JUnit View
- F. Guidelines and Recommendations

XVII. RAD: Component Test

- A. Using the Test Perspective
- B. Component Test Tasks
- C. Creating Test Projects
- D. Adding Tests and Using the Test Editor
- E. Defining Test Data and Creating a Test Run Configuration
- F. Analyzing Execution Results and Using the Test Data Comparator

XVIII. RAD: Code Review

- A. Code Review Types and Preferences
- B. Using the Code Review View and Menus
- C. Defining Filters and Running Reviews
- D. Analyzing Review Results and Details
- E. Resolving Rule Violations

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Course Outline (cont'd)

XIX. Deploying to WebSphere

- A. WebSphere Architecture
- B. Web Server Plug-ins
- C. Web and EJB Containers
- D. Application Server Services
- E. Data Access
- F. Virtual Hosts
- G. WebSphere Administration Architecture
- H. Administrative Console: Logging In, Navigating the Workspace and Saving Changes
- I. Managing Servers, Virtual Hosts, Deployed Applications and Shared Libraries
- J. Application Installation: Default Bindings and Installation Options
- K. Application Installation: Mapping Servers, Virtual Hosts and Security Roles
- L. Application Installation: Specifying Data Sources, Backends and JNDI Names

XX. RAD: Profiling Tools

- A. Understanding Profiling Concepts and the Profiling Process
- B. Profiling Architecture, Resources and Agents
- C. Using the Profiling and Logging Perspective
- D. Starting a Server in Profiling Mode
- E. Launching and Attaching to a Process
- F. Defining Profiling Settings and Filters
- G. Views for Performance Analysis and Code Coverage
- H. Using Sequence Diagrams and Viewing Statistics
- I. Analyzing Method Invocation and Execution Flow
- J. Memory Leak Analysis, Collecting Object References and Monitoring Garbage Collection
- K. ProbeKit
- L. Defining Security Settings
- M. Defining Security Roles and Method Permissions
- N. Defining Security Constraints and Resource Collections
- O. Security Role References
- P. Specifying the Run As Identity
- Q. Authentication Mechanism
- R. Security Tips

XXI. WebSphere Portal Server Introduction

- A. Portal Features
- B. Key Concepts
- C. Page Layout and Aggregation
- D. WebSphere Portal Products

XXII. Appendix A. J2EE Design Patterns

- A. What Are Design Patterns and Why Use Them?
- B. M-V-C (Model-View-Controller)
- C. Composite View, Front Controller, Intercepting Filter and View Helper Patterns
- D. Transfer Object, Session Façade, Business Delegate and Service Locator Patterns
- E. Data Access Object, Fast-Lane Reader and Value List Handler Patterns
- F. Composite Entity and Factory Design Patterns
- G. Putting It All Together