

Course Description: This course is an introduction to writing Java EE-compliant Web applications using IBM WebSphere Application Server 6.1 and Rational Application Developer 7. An overview of Java EE technology is provided, followed by hands-on experience with JNDI, JDBC, Java servlets, and JavaServer pages. Other topics covered include servlet filters, custom JSP tags, JavaMail, and an overview of JavaServer Faces (JSF).

Who Should Attend: This course is for experienced Java programmers and software engineers preparing to write components for Java EE Web applications hosted on WebSphere Application Server.

Prerequisites: Students should be comfortable with Java programming and object-oriented concepts. A minimum of six months coding experience is suggested. In addition, students should be familiar with writing simple Web pages using HTML. Prior experience using SQL and/or JDBC will be helpful.

Benefits of Attendance: Upon completion of this course, students will be able to:

- Start, stop, and configure WebSphere Application Server.
- Write, deploy, and test Java EE components using the RAD7 development tool.
- Use JNDI to access JDBC data sources.
- Write and deploy servlets and JavaServer pages on WebSphere Application Server.
- Use JDBC to read and update a database.
- Create and process HTML forms.
- Work with cookies and HTTP sessions.
- Assemble and configure a J2EE-compliant Web application.
- Use servlet filters for pre- and post-processing HTTP requests.
- Create custom JSP tags.
- Use the JavaMail API to send email from Web applications.
- Create security principals and roles.
- Apply security to Web pages.
- Implement the Model View Controller architecture.
- Write simple applications using the JavaServer Faces framework.

Course Outline:

Overview of Java EE

Java Platforms
Characteristics of "Enterprise" Computing
Java EE Technologies
Multi-Tier Architectures
Advantages of Multi-Tier Architectures
Container-Based Approach
Parties Involved in Java EE Deployment
Java EE-Compliant Application Servers
Java EE Application Models
HTTP Services Application Model
N-Tiered Application Model

Introduction to RAD

What is WebSphere@?
What is Rational@ Application Developer?
Starting RAD
Starting and Stopping WebSphere
Creating an Enterprise Application Project
Creating a Dynamic Web Project

Servlets

A Simple Servlet
Web Applications
WebSphere Deployment Descriptors
Running Servlets in RAD
Configuring Servlets
Configuring Servlets in RAD
Servlet Initialization Parameters
Generating and Validating Forms
Servlets and Threads
Other Settings in web.xml

Session Management

Cookies
Sessions
Session Id's
Session Management
Session Management Example
URL Rewriting
Invalidating Sessions
Configuring the Session Timeout

JavaServer Pages

JavaServer Pages
A Simple JSP
Running JavaServer Pages in RAD
JSP Syntax
Configuring JavaServer Pages

JSP Directives
JSP Actions
JSP Example with Forwarding
JavaServer Pages and JavaBeans
JSP with JavaBean Example
Running the JSP Bean Example
Creating a New JSP

Custom JSP Tags

Using Custom Tags
Types of Tags
Defining Tags
The tag Element
Simple Tags
Tags with Attributes
Using JSP Expressions as Attributes
Including the Tag Body
Optionally Including the Body
Including the Body Multiple Times
Running the Examples

Web Application Security

HTML Form for Survey Application
HTML Code for Survey Form
Servlet Code for the Survey Application
JavaBean Class for the Survey Application
Running the Survey Application
Java EE Security
Authentication
Configuring Authentication for Web Applications
Authorizing Access to Resources in a Web Application
Web Application Security – Example
Configuring Web Application Security in RAD
Enabling Security for the WebSphere Server

Java Naming and Directory Interface

What is JNDI?
Benefits of JNDI
Naming Services
Directory Services
Using JNDI
Context Operations
JNDI Utility Class
JNDI Example
Running the JNDI Example

Naming Exceptions
Creating a New Standalone Program

Database Access Using JDBC

A Simple JDBC Program
JDBC Driver Types
Using the Derby Database
JDBC Data Sources
Data Source Example
Configuring a JDBC Provider
Configuring a Data Source
Running the JDBC Examples
Using the Database Explorer
Using JDBC in a Servlet
Using JDBC in a JSP

Design Concepts for Web Applications

Architecture and Design
Tiered Architectures
Model-View-Controller Architecture
Java EE Design Patterns
Composite View Pattern
Composite View Strategies
Running the Demo Application
View Helper Pattern
Front Controller Pattern
Intercepting Filter Pattern

Servlet Filters

What is a Filter
Sample Filter
The Filter API
Initializing Filters
Blocking the Response
Modifying the Response
Running the Filter Examples
Creating a New Filter

JavaMail

JavaMail
Example - Send Mail
Example - Read Mail
Running the Examples

JavaServer Faces

What is JavaServer Faces?
JSF Development Roles
Developing a JSF Application
JSF Components

Component Tags
Validators
Example – Creating a Form
Running the First Example
Backing Beans
Example – Processing a Form
Backing Bean Class
The faces-config.xml file

Appendix A: Web Resources

Java Technology
WebSphere
Derby Database

Appendix B: HTML Reference

Introduction
A Simple HTML Document
Basic Tags
Formatting Tags
Links
Forms

Appendix C: Web Accessibility

What is Accessibility?
What is Section 508?
Accessibility Initiatives and Related Legislation
Types of Disabilities
Assistive Technologies
Benefits of Accessible Design
General Coding Practices
Other Recommendations

Appendix D: A JSP Template Mechanism

A Sample Application
A JSP Template Mechanism
Implementing the Template Mechanism with Custom JSP Tags
Classes in the Sample Application
Tag Library Descriptor
Running the Sample Application