



Information Booklet

Course Name:
Diploma in J2EE & JSP Technology
Course Code: D4



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Diploma in J2EE & JSP technology

1. Introduction:

Java is a programming language is a core component of Sun Microsystems' Java platform. The language derives much of its syntax from C and C++ but has a simpler object model and fewer low-level facilities. Java applications are typically compiled to bytecode (class file) that can run on any Java Virtual Machine (JVM) regardless of computer architecture. Java is general-purpose, concurrent, class-based, and object-oriented, and is specifically designed to have as few implementation dependencies as possible. It is intended to let application developers "write once, run anywhere". Java is considered by many as one of the most influential programming languages of the 20th century, and is widely used from application software to web applications.

2. Eligibility:

Graduate in any discipline

3. Duration:

260 Hours. 2 Hours each day

- Theory 60 hours
- Practical 200 hours

4. Course Details:

Type of course	Professional IT Course
Syllabus	<p>Programming Concepts</p> <ul style="list-style-type: none"> ○ Flowcharts ○ Algorithms ○ Data Flow Diagrams ○ Software Life Cycle <p>HTML</p> <p>INTRODUCTION</p> <p>The World Wide Web (WWW)</p> <p>HTML History</p> <p>Hypertext and Hypertext Markup Language</p> <p>Microsoft Front Page</p> <p>HTML DOCUMENTS</p> <p>Dividing the document into 2 parts.</p> <p style="padding-left: 40px;">Headers</p> <p style="padding-left: 40px;">Body</p> <p>Tags</p> <p style="padding-left: 40px;">Representing 2 types of tag (odd and even)</p>

Elements of an HTML Document

Text Elements

Tag Elements

Special Character elements

STRUCTURAL ELEMENTS OF HTML DOCUMENTS

Header tags

Body tags.

Paragraphs

Titles

Lists

Numbered list

Non-Numbered lists

Definition lists

FORMATTING HTML DOCUMENTS

Logical styles (source code, text enhancements, variables)

Physical Styles (Bold, Italic, underlined, crossed)

MANAGING IMAGES IN HTML

Image format (quality, size, type, ...)

Importing images (scanners)

Tags used to insert images

Frames

CREATING TABLES IN HTML DOCUMENTS

Tags used in table definition

Tags used for border thickness

Tags used for cell spacing

Tags used for table size

Dividing table with lines

Dividing lines with cells

Cell types

Titles cells

Data cells

HYPertext AND LINK IN HTML DOCUMENTS

URL/FTP/HTTP

Types of links.

Internal Links

External Links

Link Tags

Links with images and buttons

Links that send email messages

SPECIAL EFFECTS IN HTML DOCUMENTS

Text fonts
Sensitive Images
Tip tables
Page background
 Variable
 Fixed
Rotating messages (Marquee)
Counters

MULTIMEDIA

Audio files and acceptable formats (AIFF, AU, MIDI, WAVE)
 Inserting audio files
Video files and acceptable formats (MPEG, Quick Time, Video for Windows).
 Inserting video files
 Screen control attributes (WIDTH, HEIGHT, ALIGN).
 Start control sttributes (START, FILEOPEN, LOOP, LOOPDELAY, MOUSEOVER).

MANAGING FORMS

Interactive forms
Creating data entry forms

J2EE**Understanding Java and the J2EE Platform**

Reviewing a brief history of java
Understanding j2SE
Examining the origin of (J2EE)
 Application components
 Roles
Working with the model-view-controller
 The model
 The view
 The control
Understanding J2EE APIs
 J2EE standard services
 Application component APIs
Understanding the java community process (JCP)

Reviewing XML Fundamentals

- Well-formed XML
- Valid XML
- Understanding XML Document structure
 - Prologue
 - Elements
 - Attributes
- Examining XML parsers
 - DOM parsers
 - SAX parsers
 - DOM versus SAX
- Implementing XML DTD'S
- Understanding XML Namespaces
- Exploring XML schema
- Working with extensible style sheet
- Language transformations (XSLT)
- Producing a simple HTML with XSLT
- Producing a wireless markup language (WML) document with XML
- Introducing J2EE XML-based API'S

Introducing application servers

- Implementing the J2EE platform
- Understanding the features of an application server
 - Scalability
 - Client agnosticism
 - Server management
 - Development
- JBoss, Apache , Tomcat

The presentation tier**Studying serve let programming**

- Creating a magazine publisher application using servlets
 - The server side
 - The client side
 - Creating an HTML login screen
- Using the servlet context
- Performing URL Redirection
 - Using requestDispatcher
 - Using sendRedirect()
 - The lost password screen example
- Session tracking with servlets
- Cookies
- URL rewriting
- Hidden fields
- The session-tracking API with HttpSession object

- Example of a LoginServlet with an access counter
- Listener
- Filters
- Deploying servlets
- The web-application archive
- Examining the web.xml deployment descriptor
- Mandatory servlet elements
- Servlet listener elements
- Servlet filter elements
- Applet-servlet communication

Going over JSP Basics

- Introducing JSP
- Examining MVC and JSP
- JSP scripting elements and directives
 - Declarations
 - Expressions
 - Directives
 - Scriptlets
 - Comments
 - Actions
 - Implicit JSP objects
 - Working with variable scopes
 - Error pages
 - Using JavaBeans
 - Using JavaBeans in JSP
 - The scope of JavaBeans
 - Creating a login jsp using a java bean
 - Deploying the login jsp example using tomcat
- Using jsp tag extension
 - Explaining custom-tag concepts
 - Working with the jsp standard tag library
 - Importing a tag library
 - The tag library descriptor
 - The tag-library descriptor locations
 - Explanation taglib mapping
- Understanding tag handlers
 - Classic tag handlers
 - Simple tag handlers
- Exploring dynamic attributes

The enterprise information system tier

- Introducing java transactions
 - atomic transactions
 - Examining transactional objects and participants
 - Reviewing atomicity and the two-phase commit protocol
 - Optimizations
 - Heuristics and removing the two-phase block
 - Understanding Local and Distributed transactions
 - Local transactions
 - Distributed transactions
 - Interposition

Understanding consistency
Introducing isolation (Serializability)
 Optimistic versus pessimistic concurrency control
 Degrees of isolation
Understanding the role of durability
Performing failure recovery
Using transaction-Processing Monitors

Transaction Models
 Nested transactions
 Nested top-level transactions
 Extended transaction models and the J2EE activity service

Understanding transaction standards
 X/Open distributed transaction processing
 The object transaction service

Understanding the java transaction API
 The JTA'S relationship to the JTS
 The user transaction interface
 The transaction manager interface
 Suspending and resuming a transaction
 The transaction interface
 The XAResource interface
 Enrolling participants with the transaction
 Transaction synchronization
 Transaction equality
 The XID interface

Examining JNDI AND Directory services

Explaining naming services and directory services
Providing an overview of X.500 and LDAP
 LDAP implementation
 Configuring OpenLDAP
 LDAP schema

Reviewing the JNDI structure
 Directories and entries
 Names and attributes
 Biding and references
 Contexts and subcontexts
 File systems
 DNS naming conventions
 LDAP mapping

Using JNDI and LDAP
 Connecting to the server
 Specifying environment properties
 Implementing authentication
 Performing simple LDAP lookups
 Performing searches and comparing entries
 Modifying the directory
 Adding objects to a directory

Connecting to DNS
 DNS environment properties
 DNS lookups
 Reverse DNS lookups

Considering other JNDI service providers
File systems
COS naming for CORBA
Network information system
Directory services markup language
Application server providers
Exploring the enterprise javabeans environment

Understanding java authentication and authorization services

Examining the importance of java security
Typical java security weaknesses
Providing an overview of JAAS
Understanding security realms
Single login across security domains
Setting up for JAAS
Callback handlers
Pluggable/stackable authentications
Examining the java subject class
Authenticating users
Authorizing users
JAAS policy files
Compiling the example
Debugging the simple JAAS module
Hiding JAAS
Predefined JAAS login callbacks and their handlers
Custom login modules
Writing your own login handler
Writing your own callback handler
Authenticating a web user against a windows NT domain
Brief security analysis
Security limitations
Implementations
Alternative methods

The service tier

Understanding EJB architecture and design

Explaining the EJB components model
Reviewing roles, relationships and responsibilities
The deployment descriptor
The bean provider
The server/container provider
The application assembler
The EJB deployer
The system administrator
The enterprise javabeans
Entity beans
Session beans
Entity beans versus session beans
Message-driven beans (MDB)
Understating EJB container functionality

Restrictions on the bean provider
Achieving scalability by pooling resources
The life of an entity bean
The life of a session bean
Transactions and EJBs
Container-managed transactions
Examining a transactional EJB example
Naming objects
The security infrastructure
The timer service
Persistence in BMP and CMP
Distribution support
Integrating with CORBA
Why CORBA important to J2EE
When J2EE met CORBA
Performance and scalability issues
Application-server availability strategies
Transaction concerns
Threading model
Tools

Explaining session beans and business logic

Writing a session EJB
The home interface
The component interface
The session bean class
The deployment descriptor
The stateless session bean
The ejb-jar.xml deployment descriptor
Deployment
Writing an EJB client
Stateful-session-bean model
The lifecycle of the stateful session bean
Passivation and activation
Implementing the session synchronization interface
Storing a handle
Choosing between stateless and stateful beans
The stateless model
The stateful model
Summary

Working with entity beans

Understanding entity beans
Remote and local client views
Entity-bean components
The entity-container contract
Container-managed persistence (CMP)
Bean-managed persistence (BMP)
Using message-driven beans
Understanding the need for MDB
Reviewing MDB lifecycle methods

Examining MDB deployment descriptors
Deployment descriptor as per EJB 2.0
Changes in MDB 2.1 deployment descriptors
Internal messaging within EJB applications
Understanding clients and MDB
Working with EJBs asynchronously

The data tier

Reviewing java database connectivity

Introduction JDBC driver types
Creating your first JDBC program
Retrieving data
Database-error processing
Processing result sets
The resultsetmetadata class
Scrollable result sets
The preparedstatement class
The callable statement class
Performing batch updates
Using savepoints
Configuring the JDBC-ODBC Bridge
Explaining database connection pools and data sources
Configuring connection pools
Creating data source objects
Revisiting DBProcessor
Using the rowset interface
Working with cachedrowset
The webrowset class

Web services

Introducing web services

Defining web services
Universal resource identifiers
XML-based technologies
Why do we need web services?
Remote method invocation
DCOM
CORBA
Web-service architecture
Advantages of web services
Examining Some Web-Service Scenarios
Enterprise-application integration (EAI)
Understanding the Technologies behind Web Services
SOAP
WSDL
UDDI
Web services in a service-oriented architecture

Understanding J2EE Web Services

- Integrating J2EE and Web Services
 - Using Java servlets in a Web-services architecture
 - Exposing EJBs as Web services
 - Using JMS as a transport layer
 - Exploring Products and Tools for Web Services
- JSR 109—J2EE Web Services
 - The client-side programming model
 - The server-side programming model
 - Web-service deployment descriptors

Advanced topics**Exploring Frameworks and Application Architecture**

- Frameworks versus class libraries
- The pains of J2EE
- Understanding Framework Principles
- Inversion of control
- Separation of concerns
- Loose coupling
- Extensibility
- Configurability
- Alignment
- Design patterns
- Examining the Struts framework example
- Understanding Framework Objectives and Benefits
 - Design
 - Development and testing
 - Production and maintenance
 - Application portfolios
- Reviewing Application Architecture beyond Frameworks
 - Overview of architectures
 - Traditional application architecture
 - Services-oriented architecture
 - Application architecture versus frameworks
- Building Your Own Framework
 - Building versus buying
 - Open source
 - Software vendor
 - System Integrators (SIs)
- Predicting the Future of Frameworks
- Alternatives to Frameworks
 - All-in-one proprietary environments
 - Model-driven architecture
 - Minimal J2EE
 - Advanced Integrated Development Environments

JSP**Introduction to Web Application Technologies**

Web Application Technologies
HTTP Client-Server Architecture
Web Site Structure
Web Sites and Web Applications
Execution of CGI Programs
Advantages and Disadvantages of CGI Programs
Execution of Java Servlets
Advantages and Disadvantages of Java Servlets
Using Separate Processes or Using Threads
Java Servlets
JavaServer
Web Application — Three—Tier Architecture
Model-View—Controller (MVC) Architecture in a Web Application
Model 2 Architecture
Model 2 Frameworks
Java EE Containers
Java EE Architecture Example
Job Roles
Web Application Migration

Developing a View Component

Designing a View Component
Types of View Components
Soccer League Case Study
List Leagues Analysis Model
List Leagues Page Flow
HTTP Revisited
Hypertext Transfer Protocol
HTTP GET Method
HTTP Request
HTTP Request Headers
HTTP Response
HTTP Response Headers
Web Container Architecture
Request and Response Process
Sequence Diagram of an HTTP GET Request
Developing a Simple HTTP Servlet
List Leagues Architecture Model
The HTTPServlet API
The ListLeaguesServlet Class
Configuring and Deploying a Servlet
Soccer League Web Application Structure
Configuring a Servlet Definition
Configuring a Servlet Mapping
Complete Deployment Descriptor

Web Application Context Root
Sun Java™ System Application Server Deployment
WAR Files for Deployment
Activating the Servlet in a Web Browser

Developing a Controller Component

Designing Controller Components
Types of Controller Components
Add a New League Analysis Model
Add a New League Page Flow
Form Verification
Soccer League Web Structure
Creating an HTML Form
Add a New League Web Form
The form Tag
Textfield Component
Drop-Down List Component
Submit Button
Complete HTML Form
How Form Data Is Sent in an HTTP Request
Form Data in the HTTP Request
HTTP GET Method Request
HTTP POST Method Request
HTTP GET and POST Methods
Developing a Controller Servlet
Add a New League Use Case Revisited
Servlet API to Retrieve Form Parameters
Developing the AddLeagueServlet Servlet
Dispatching From the Controller to a View
Add a New League Use Case
Request Scope
Using a Request Dispatcher
Developing the AddLeagueservice Code
Developing the SuccessServlet Code

Developing Dynamic Forms

Servlet Life Cycle Overview
Servlet Class Loading
One Instance Per Servlet Definition
The init Life Cycle Method
The service Life Cycle Method
The destroy Life Cycle Method
Using Initialization Parameter to Customize the Add a New League Form
Handling Errors in a Web Form
Repopulating Web Forms

Sharing Application Resources Using the Servlet Context

Purpose of the Servlet Context
Soccer League Demonstration
Servlet Context
Developing a Servlet Context Listener

Designing the Business Tier

Describing the Analysis Model
Domain Entities
Designing a Service Component
 Entity Service
 Facade Service

Developing Web Applications Using Struts

Struts Framework
 Model-View-Controller Pattern
 Front Controller Pattern
 Struts MVC Framework
Developing a Struts Action Class
 Struts Action Class API
 Creating an Action Class
Configuring the Struts Action Mappings
 Configuring the Infrastructure Controller
 Configuring Action Mappings
 Installing the Struts Library Files

Developing Web Applications Using Session Management

HTTP and Session Management
Designing Web Applications to Use Session Management
Using Session Management in a Web Application
Using Cookies for Session Management
Using URL-Rewriting for Session Management

Using Filters in Web Applications

Web Container Request Cycle
 Web Container Request Processing
 Applying Filters to an Incoming Request
 Applying Filters to a Dispatched Request
Filter API
Developing a Filter Class
 The PerformanceFilter: Class
 The init Method
 The doFilter Method
 The destroy Method
Configuring the Filter
 Declaring a Filter in the web .xml File
 Declaring a Filter Mapping in the web .xml File

Integrating Web Applications With Databases

Mapping Sample Data Structures into Database Entities
Designing a Web Application
 Domain Objects
 Database Tables
 Data Access Object (DAO) Pattern
 DAO Pattern Advantages
 JDBC™ API

	<p>Developing a Web Application Using a Database</p> <ul style="list-style-type: none">Traditional Approaches to Database ConnectionsUsing a DataSource and the JNDI APIConfiguring a DataSource and the JNDI API <p>Developing JSP Pages</p> <ul style="list-style-type: none">JavaServer Pages Technology<ul style="list-style-type: none">How a JSP Page Is ProcessedDeveloping and Deploying JSP PagesWriting JSP Scripting Elements<ul style="list-style-type: none">CommentsDirective TagDeclaration TagScriptlet TagExpression TagImplicit VariablesUsing the page DirectiveUsing Standard TagsUsing Expression Language (EL) ElementsConfiguring the JSP Environment <p>Developing JSP Pages Using Custom Tags</p> <ul style="list-style-type: none">The Java EE Job Roles Involved in Web Application DevelopmentDesigning JSP Pages with Custom Tag Libraries<ul style="list-style-type: none">Contrasting Custom Tags and Scriptlet CodeDeveloping JSP Pages Using Custom TagsCustom Tag Library OverviewCustom Tag Syntax RulesJSTL Sample TagsUsing a Custom Tag Library in JSP Pages<ul style="list-style-type: none">Using an Empty Custom TagUsing a Conditional Custom TagUsing an Iterative Custom TagJSTL Tags <p>Developing Web Applications Using Struts Action Forms</p> <ul style="list-style-type: none">Struts Application Components<ul style="list-style-type: none">Model Elements ReviewControl Elements ReviewView Elements ReviewDeveloping an ActionForm Class<ul style="list-style-type: none">The Add a New League FormThe AddLeagueForm ClassData ConversionWriting the validate MethodStruts ActionError ClassHow the Controller Uses the Form BeanDeveloping the JSP Code for a View FormConfiguring the View Forms<ul style="list-style-type: none">Configuring the Form BeansConfiguring the View Aspects of the Actions <p>Building Reusable Web Presentation Components</p> <ul style="list-style-type: none">Complex Page Layouts
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	<ul style="list-style-type: none">Presentation Segment OverviewOrganizing Presentation SegmentsIncluding JSP Page SegmentsUsing the include DirectiveUsing the jsp : include Standard ActionUsing the jsp : param Standard ActionDeveloping Layouts Using Struts TilesLayout JSP FileTiles LayoutContent Body <p>Introducing JavaServer™ Faces Technology</p> <ul style="list-style-type: none">Introducing JavaServer Faces TechnologyComponents of a JavaServer Faces Technology-Based Web ApplicationComparison of JavaServer Faces Technology With Struts FrameworkKey JavaServer Faces ConceptsUI Component ModelUI Component Classes <p>Quick Reference for HTML</p> <ul style="list-style-type: none">HTML and Markup LanguagesCreating an HTML DocumentTag SyntaxCommentsSpaces, Tabs, and New Lines Within TextCharacter and Entity ReferencesCreating Links and Media TagsThe A Element and the HREF AttributeThe IMG Element and the SRC AttributeThe APPLET ElementThe OBJECT ElementText Structure and HighlightingHTML FormsThe FORM TagHTML Form ComponentsInput TagsText FieldsSubmit ButtonsReset ButtonCheckboxesRadio ButtonsPasswordHidden FieldsThe SELECT TagThe TEXTAREA TagCreating HTML TablesAdvanced HTMLJavaScript™ Programming LanguageCSSFrames <p>Quick Reference for HTTP</p> <ul style="list-style-type: none">HTTP OverviewRequest Structure
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	<ul style="list-style-type: none">HTTP MethodsRequest HeadersResponse StructureResponse HeadersStatus CodesCGI OverviewEnvironment Variables SetData Formatting
	<p>Quick Reference for the Sun Java System Application Server</p> <ul style="list-style-type: none">Sun Java System Application Server OverviewInstalling the Sun Java System Application ServerStarting and Stopping the Application ServerApplication ConfigurationLogging and Log Files
	<p>Quick Reference for the Ant Tool</p> <ul style="list-style-type: none">Ant OverviewBuild File Structure<ul style="list-style-type: none">ProjectsTargetsTasksPropertiesAnt Special Features<ul style="list-style-type: none">PatternsThe fileset ElementFilteringThe filter TaskBasic Built-in Ant Tasks<ul style="list-style-type: none">The copy TaskThe delete TaskThe mkdir TaskThe echo TaskThe javac TaskThe javadoc TaskThe jar TaskComplete Ant Build FileExecuting AntInstalling Ant
	<p>Quick Reference for UML</p> <ul style="list-style-type: none">UML FundamentalsGeneral Elements<ul style="list-style-type: none">PackagesStereotypesAnnotationConstraintsTagged ValuesUse Case DiagramsClass Diagrams<ul style="list-style-type: none">Class Nodes

Inheritance
Interface Implementation
Association, Roles, and Multiplicity
Aggregation and Composition
Association Classes
Other Association Elements
Object Diagrams
Collaboration Diagrams
Sequence Diagrams
Statechart Diagrams
Transitions
Activity Diagrams
Component Diagrams
Deployment Diagrams

Project Work

5. Fee:

Rs. 15000/- (exclusive of Service Tax)