Information Booklet

Course Name:

Diploma in J2EE & JSP Technology

Course Code: D4

Address: Sh No BSH 1,2,3
Almedia residency,
Xetia Waddo Duler
Mapusa Goa
E-mail Id: ITKP@3i-infotech.com
Tel: (0832) 2465556
(0832) 6454066

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	**Programming Concepts** o Flowcharts o Algorithms o Data Flow Diagrams o Software Life Cycle **HTML** **INTRODUCTION** The World Wide Web (WWW) HTML History Hypertext and Hypertext Markup Language Microsoft Front Page **HTML DOCUMENTS** Dividing the document into 2 parts. Headers Body Tags Representing 2 types of tag (odd and even) 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 AddLeagueservleiz 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 Act ion 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 PerfoirmanceFilter: 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

Developing a Web Application Using a Database

Traditional Approaches to Database Connections
Using a DataSource and the JNDI API
Configuring a DataSource and the JNDI API

Developing JSP Pages
JavaServer Pages Technology
How a JSP Page Is Processed
Developing and Deploying JSP Pages
Writing JSP Scripting Elements
Comments
Directive Tag
Declaration Tag
Scriptlet Tag
Expression Tag
Implicit Variables
Using the page Directive
Using Standard Tags
Using Expression Language (EL) Elements
Configuring the JSP Enviromnent

Developing JSP Pages Using Custom Tags
The Java EE Job Roles Involved in Web Application Development
Designing JSP Pages with Custom Tag Libraries
Contrasting Custom Tags and Scriptlet Code
Developing JSP Pages Using Custom Tags
Custom Tag Library Overview
Custom Tag Syntax Rules
JSTL Sample Tags
Using a Custom Tag Library in JSP Pages
Using an Empty Custom Tag
Using a Conditional Custom Tag
Using an Iterative Custom Tag
JSTL Tags

Developing Web Applications Using Struts Action Forms
Struts Application Components
Model Elements Review
Control Elements Review
View Elements Review
Developing an ActionForm Class
The Add a New League Form
The AddLeagueForm Class
Data Conversion
Writing the validate Method
Struts ActionError Class
How the Controller Uses the Form Bean
Developing the JSP Code for a View Form
Configuring the View Forms
Configuring the Form Beans
Configuring the View Aspects of the Actions

Building Reusable Web Presentation Components
Complex Page Layouts
Presentation Segment Overview

Organizing Presentation Segments
Including JSP Page Segments
Using the include Directive
Using the jsp : include Standard Action
Using the jsp : param Standard Action
Developing Layouts Using Struts Tiles
Layout JSP File
Tiles Layout
Content Body

Introducing JavaServer™ Faces Technology
Introducing JavaServer Faces Technology
Components of a JavaServer Faces Technology-Based Web Application
Comparison of JavaServer Faces Technology With Struts Framework
Key JavaServer Faces Concepts
UI Component Model
UI Component Classes

Quick Reference for HTML
HTML and Markup Languages
Creating an HTML Document
Tag Syntax
Comments
Spaces, Tabs, and New Lines Within Text
Character and Entity References
Creating Links and Media Tags
The A Element and the HREF Attribute
The IMG Element and the SRC Attribute
The APPLET Element
The OBJECT Element
Text Structure and Highlighting
HTML Forms
The FORM Tag
HTML Form Components
Input Tags
Text Fields
Submit Buttons
Reset Button
Checkboxes
Radio Buttons
Password
Hidden Fields
The SELECT Tag
The TEXTAREA Tag
Creating HTML Tables
Advanced HTML
JavaScript™ Programming Language
CSS
Frames

Quick Reference for HTTP
HTTP Overview
Request Structure
HTTP Methods

Request Headers
Response Structure
Response Headers
Status Codes
CGI Overview
Environment Variables Set
Data Formatting

Quick Reference for the Sun Java System Application Server
Sun Java System Application Server Overview
Installing the Sun Java System Application Server
Starting and Stopping the Application Server
Application Configuration
Logging and Log Files

Quick Reference for the Ant Tool
Ant Overview
Build File Structure
Projects
Targets
Tasks
Properties
Ant Special Features
Patterns
The fileset Element
Filtering
The filter Task
Basic Built-in Ant Tasks
The copy Task
The delete Task
The mkdir Task
The echo Task
The javac Task
The javadoc Task
The jar Task
Complete Ant Build File
Executing Ant
Installing Ant

Quick Reference for UML
UML Fundamentals
General Elements
Packages
Stereotypes
Annotation
Constraints
Tagged Values
Use Case Diagrams
Class Diagrams
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)