



Information Booklet

Course Name:
Course in J2EE
Course Code: P6



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Course in J2EE

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:

XIIth pass and above and basic computer knowledge

3. Duration:

80 Hours. Two and half hours each day

- Theory 20 hours
- Practical 60 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>Understanding Java and the J2EE Platform</p> <p>Reviewing a brief history of java Understanding j2SE Examining the origin of (J2EE) Application components Roles</p> <p>Working with the model-view-controller The model The view The control</p> <p>Understanding J2EE APIs J2EE standard services Application component APIs</p> <p>Understanding the java community process (JCP)</p>

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

Project Work

5. Fee:

Rs. 4000/- (exclusive of all taxes)