Java 2 Enterprise Edition

Objective: Java 2.0 Enterprise Edition (J2EE) is the industry standard for developing portable, robust, scalable and secured web-enabled applications. This course entails what J2EE is, its benefits, J2EE main components, Evolution of Enterprise Application Frameworks, Why use J2EE, J2EE Platform Architecture, J2EE APIs and Technologies and J2EE Reference Implementation. On completion of this course, the students can get expertise on web technologies, handle complex low level details inherent in enterprise applications like security, transaction processing and multi-threading etc. They can claim job opportunities as Expert Java Developers, Engineers or Java Quality Analysts in reputed organizations.

Topic-wise Contents

This course is divided into five major areas as followings:-

Name of Topic

Core Java

GUI Development

Database Concept and JDBC

J2EE

Project

Brief description of Contents(Topic-wise)

Topics to Cover: Core Java

Introduction to Java – History and Creation of Java, Features of Java, Byte Code, OOPs Principles.

Data Types – Primitive, non-primitive; Primitive Data types defined in java, etc.

Variables – Declaration, Assignment, Dynamic Initialization, Scope and Life time, Type Conversion and Casting, Type Promotion etc.

Arrays – Declaration, Types, Storage, Alternative Array Declaration etc.

Operators – Arithmetic Operators, Bitwise Operators, Relational, Boolean Logic, Assignment, Conditional Operator; Operator Precedence etc.,

Control Statements – Selection Statements

Iteration Statements – while, do—while, for, Nesting of loops, for, for-each version of the for loop, Nesting of loops,

Jump Statements – break, continue, and return.

Classes, Objects, Object Reference Variables and Methods, Constructors, use of this keyword, Garbage Collection, finalize method, Overloading Methods, Argument Passing, Recursion, Access Control, static, final, Nested and Inner

Classes, String Class, Inheritance and Types of inheritance, Multilevel Hierarchy, using super keyword etc., Method Overriding, Dynamic Method Dispatch, Using final with Inheritance, The Object Class

Packages: Defining a Package, Package and Class Path etc., Access Protection, Importing Packages

Interfaces – Defining an Interface, Implementation, Applying Interfaces etc.

Exception Handling – Fundamentals, Exception types, Uncaught Exceptions, Using try and catch, Multiple catch Clauses, Nested try statements, throw, throws, finally, Java's Built in Exceptions, Chained Exceptions, Creating Own Exception Subclass.

Multithreading – Introduction of threads, Main Thread, Creating Threads, Multiple Threads, isAlive() and join() methods, Thread Priorities, Synchronization; Deadlock; Suspending, Resuming and Stopping threads etc.

I/O Basics and Definitions – Streams, Byte Streams and Character Streams, Reading and Writing Console Input Characters and Strings.

The Byte Streams – Input, Output, FileInput, FileOutput, ByteArrayInput, ByteArrayOutput etc.

The Character Streams – Reader, Writer, FileReader, FileWriter, ChaArrayReader, CharArrayWriter etc.

String – Constructors, Special String Operations, Character Operations, String Comparison, Searching Strings, Modifying a String, valueof() method etc.

String Buffer, String Builder etc.

Java.lang Collections – Primitive Type Wrappers, Void, Process, Rutime, Process Builder, System, Object, Clone(), Class, Class Loader, Math, Package, Runtime Permission, Throwable, Security Manager etc.

Network Programming – Networking Basics, Java and the Net, Inet Addresses, TCP/IP Client Sockets, URL, URL Connection, TCP/IP Server Sockets, Datagram's etc.

AWT – AWT Classes, Window Fundamentals, Working With Graphics, Working with color, Paint Mode, Fonts etc., Control Fundamentals, Labels, Buttons, Check Boxes, Choice, Lists, Text Field, Scroll Bars, Text Area, Layout Manager, Insets, Menu, Dialog Box, FileDialog, Event Handling with AWT Controls etc.

Applets – Basics, Architecture, An Applet Architecture, Display Methods, Repaint() Method, Status Window, HTML Applet Tag, Passing Parameters to Applets, Event Handling (Event Classes, Event Listener Interfaces, Delegation Event Model, Adapter Classes)

Swing – Japplet, Icons and Labels, JTextField, JButton, JCheckBox, JRadioButton, JComboBox, JTabbedPane, JScrollPane, JTable etc.

JDBC – JDBC Components, JDBC Architecture, Introduction to RDBMS, JDBC Programming, Database Concepts, Select, DML Commands like Insert, Update, SQL Function and Group by Clause, Join, Nested Query, JDBC Types, Error Checking and The SQL Exception Class, The SQL Warning Class, Executing SQL Queries, ResultSet, Metadata.

Remote Method Invocation (RMI) – Naming, Registry, Locate Registry, Remote Referencing, Client Sockets, Failure Handler, Server Sockets etc.

Introduction to JSTL, Introduction to JAR

Java Server Pages (JSP) – Installation, Tags (Variables and Objects, Methods, Control Statements, Loops), Tomcat, Request String, Session, Cookies, Session Objects etc.

Servlets – Life Cycle, Using Tomcat, Simple Servlet , Servlet API, java.servlet Package, javax.servlet.http Package, Handling HTTP Requests and Responses, Using Cookies and Session Tracking.

Enterprise Java Beans(EJB) – Container, Classes, Interfaces, Entity Java Beans (Container-Managed Persistence (CMP) , Bean-Managed Persistence) , Session Java Bean (Stateless vs Stateful), Deployment Descriptors, Message Driven Bean, The JAR File etc.

Project

Eligibility: Engineering/'A' or 'B' Level/BSc/MSc (IT) /MCA with good knowledge of C or C++.