

(Dec. 2014)

Course Name : Certificate Course in Java & Advance Java Programming

Eligibility: 10+2 with relevant basic knowledge

Duration: 6 months, 210 hrs

Objective:

- To develop awareness, capability and confidence right from the beginning in the participant and to take up independent assignment in computer field using Java technology and to work as Web Developer.
- To provide the practical and theoretical knowledge in Java programming language.
- To develop professional with the concept and technique in Java
- To make professional in Java programming

Module	Subject	Topics	Total Duration	Theory	Practical
B02-01	Programming Fundamentals of C#	Fundamentals of C# basics	25	10	15
B02-02	Core Java Programming	Fundamentals of OOPs, Core Java, Applets	110	40	70
B02-03	Advance Java	JDBC, RMI, Servlets, JSP, Beans, EJB	55	20	35
B02-04	Project Work Development of Web Application	Using Core & Advance Technologies of Java & Oracle/SQL	20	-	20
	Total (Hrs)		210	70	140

		binding, Message communication); Benefits of OOP; Applications of OOP.		
		JAVA EVOLUTION: Java History; Java Features (Compiled and interpreted, Platform-independent and portable, Object-oriented, Robust and secure, Distributed, Simple, small and familiar, Multithreaded and interactive, High performance, Dynamic and extensible); How Java Differs from C and C++ (Java and C, Java and C++); Java and Internet, Java and World Wide Web, Web Browsers (Hot Java, Netscape Navigator, Internet Explorer); Hardware and Software Requirements; Java Support Systems, Java Environment (Java development kit, Java standard library).	02	
		OVERVIEW OF JAVA LANGUAGE: Introduction; Simple Java Program (Class declaration, Opening brace, The main line, The output line); More of Java (Use of math functions, Comments); An application with Two Classes; Java Program Structure (Documentation section, Package statement, Import statements, Interface statements, Class definitions, Main method class); Java Tokens (Java character set, Keywords, Identifiers, Literals, Operators, Separators); Java Statements; Implementing a Java Program (Creating the program, Compiling the program, Running the program, Machine neutral); Java Virtual Machine; Command Line Arguments; Programming Style.	04	08
		CONSTANTS, VARIABLES AND DATA TYPES: Introduction; Constants (Integer constants, Real constants, Single character constants, String constants, Backlash character constants); Variables; Data Types (Integer types, Floating point type, Character type, Boolean type); Declaration of Variables; Giving Values to Variables (Assignment statement, Read statement); Scope of Variable; Symbolic Constants (Modifiability, Understandability); Type Casting (Automatic conversion); Getting Values of Variables; Standard Default Values.	03	06
		OPERATORS AND EXPRESSIONS: Introduction; Arithmetic Operators (Integer arithmetic, Real arithmetic, Mixed-mode arithmetic); Relational Operators; Logical Operators; Assignment Operators; Increment and Decrement Operators; Conditional Operators; Bit-wise Operators; Special Operators (instance of operator, Dot operator); Arithmetic Expressions; Evaluation of Expressions; Precedence of Arithmetic Operator; Type Conversions in Expressions (Automatic type conversion, Casting a value); Operator Precedence and Associativity; Mathematical Functions.	03	06
		DECISION MAKING AND BRANCHING: Introduction; Decision Making with if Statement; Simple if Statement; The if....else Statement; Nesting of if....else Statements; The else if Ladder; The switch statement;	02	02

		The ?: Operator.		
		DECISION MAKING AND LOOPING: Introduction; The while Statement; The do Statement; The for Statement (Additional features of for loop, Nesting of for loops); Jumps in Loops (Jumping out of a loop, Skipping a part of a loop); Labeled Loops.	02	04
		CLASSES, OBJECTS AND METHODS :- Introduction; Defining a Class; Adding Variables; Adding Variables; Adding Methods; Creating Objects; Accessing Class Members; Constructors; Methods Overloading; Static Members; Nesting of Methods; Inheritance: Extending a Class (Defining a subclass, Subclass constructor, Multilevel inheritance, Hierarchical inheritance); Overriding Methods; Final Variables and Methods; Final Classes; Finalizer Methods; Abstract Methods and Classes; Visibility Control (public access, friendly access, protected access, private access, private protected access, Rules of Thumb).	04	08
		ARRAYS, STRINGS AND VECTORS: Arrays; One-Dimensional Arrays; Creating an Array (Declaration of arrays, Creation of arrays, Initialization of arrays, Array length); Two-Dimensional Arrays (Variable size arrays); Strings (String arrays, String methods, StringBuffer class); Vectors; Wrapper Classes.	02	04
		INTERFACES: Introduction; Defining Interfaces; Extending Interfaces; Implementing Interfaces; Accessing Interface Variables.	01	02
		PACKAGES: Introduction; System Packages; Using System Packages; Naming Conventions; Creating Packages; Accessing a Package; Using a Package; Adding a Class to a Package; Hiding Classes.	01	02
		MANAGING ERRORS AND EXCEPTIONS: Introduction; Types of Errors (Compile-time error, Runtime error); Exceptions; Syntax of Exception Handling Code; Multiple Catch Statements; Using finally Statement; Throwing Our Own Exceptions; Using Exceptions for Debugging.	02	04
		APPLET PROGRAMMING: Introduction; How Applets Differ from Applications; Preparing to Write Applets; Building Applet Code; Applet Life Cycle (Initialization state, Running State, Idle or stopped state, Dead state, Display state); Creating an Executable Applet; Designing a Web Page (Comment Section, Head Section, Body Section); Applet Tag; Adding Applet to HTML File; Running the Applet; More About Applet Tag; Passing Parameters to Applets; Aligning the Display; More about HTML Tags; Displaying Numerical Values; Getting Input from the User (Program analysis).	04	08

		<p>GRAPHICS PROGRAMMING: Introduction; The Graphics Class; Lines and Rectangles; Circles and Ellipses; Drawing Arcs; Drawing Polygons; Line Graphs; Using Control Loops in Applets; Drawing Bar Charts.</p>	02	04
		<p>JAVA AWT : java AWT package Containers (Component, Container, Panel, Window, Frame, Canvas), Basic User Interface components (Labels, Buttons, Check Boxes, Radio Buttons, Choice, Text Fields, Text Areas, Scrollbars), Layouts (Flow Layout, Grid Layout, Border Layout, Card Layout).</p>	02	04
		<p>EVENT HANDLING: Event delegation Approach, ActionListener, AdjustmentListener, MouseListener and MouseMotionListener, WindowListener, KeyListener</p>	01	02
		<p>JAVA I/O HANDLING: I/O File Handling(InputStream & OutputStreams, FileInputStream & FileOutputStream, Data I/P and O/P Streams, Buffered I/P and O/P Streams, File Class, Reader and Writer Streams, RandomAccessFile)</p>	02	04
		<p>MULTITHREADING: Overview of Multithreading, The Thread control methods, Thread life cycle, Newly created threads, Main thread, Creating a Thread (Implementing Runnable Interface, Extending the Thread Class), Thread Synchronization, Writing Applets with Threads.</p>	02	04
		Total	40	70
B02-03	ADVANCE JAVA	<p>SOCKET PROGRAMMING: Introduction, TCP/IP Protocol, UDP Protocol, Ports, Using TCP/IP Sockets, Using UDP Sockets.</p>	01	03
		<p>JAVA DATABASE CONNECTIVITY (JDBC): Introduction to JDBC, JDBC Drivers Type, Connection, JDBC URLs, Driver Manager, Statements-Creating Executing Closing, Result Set-Data Types and Conversions, Prepared Statement, Callable Statement, Mapping SQL and Java Types, JDBC-ODBC Bridge Driver. DriverManager Class, Java.SQL Package (Connection Interface, Statement Interface, Prepared Statement Interface, ResultSet Interface, ResultSetMetaData Interface), SQL Exception class.</p>	04	06
		<p>REMOTE METHOD INVOCATION (RMI): N-tier Architecture, Distributed object technologies, Locating & loading Remote classes, Locating remote objects & providing references to them, Enabling remote method class, RMI Architecture(Application Layer, Proxy Layer, Remote Reference Layer, Transport Layer), Naming, Remote Interface, Unicast Remote Object, Socket Vs RMI programming</p>	04	06
		<p>Corba: Distributed Applications , CORBA-An Introduction, The OMG, CORBA, Architecture, CORBA</p>		

		Services, CORBA Products, JAVA IDL.		
		JAVA SERVLETS: Introduction to Server Side Technologies, Servlet Life cycle, HttpServlets, GenericServlets, init(),service(), doGet(), doPost(), destroy() , Servlets & JDBC. Movement to Server Side JAVA, Overview of Servlets, Common Gateway Interface (CGI), The JAVA Servlet Architecture, Generic Servlet and HTTP Servlet, The Servlet Interface, Requests and Responses, The Life Cycle of a Servlet, Retrieving Form Data in a Servlet, Session Tracking Cookies.	04	06
		Java Server Pages (JSP): Compare and Contrast JSP with CGI and Servlet Technologies, Develop a basic JavaServer Pages, Deploy JavaServlet Pages, List JSP Directives, Intergrate JSP with Java Beans Components, Handle JSP exceptions, Compare two-tier and multi-tier web application architectures	04	06
		Java Beans: Java Beans Concepts and the Beans Development Kit, Using the Bean Box, Writing a Simple Bean Properties, Manipulating Events in the Bean Box, The Beaninfo interface, Bean customization, Bean Persistence.	01	04
		Enterprise Java Beans (EJB): Introduction, Architecture of EJB, EJB Servers, Containers, EJB Implementation, Remote Interface of Beans, EJB Sessions Beans, Transactions and EJB Deployment, Writing EJB Clients.	02	04
		Total	20	35
B02-04	Project Work	Development of Web Application: Using Core & Advance Technologies of Java & Oracle/ SQL	---	20
		Total	---	20