JAVA / J2EE Course Content

Introduction

Introduction to Java

Language Fundamentals

Features of Java Language.

JVM – The heart of Java

The Java Environment:

Installing Java.
Java - Environment Setup
Java Program Development
Compilation
Executions.

Basic Language Elements:

Lexical Tokens, Identifiers
Keywords, Literals, Comments
Primitive Datatypes, Operators
Assignments.

**Java Basics:**
Java - Loop Control
Java - Decision Making
Java - Numbers
Java - Characters
Java - Strings
Java - Arrays
Java - Date & Time
Java - Regular Expressions
Java - Methods

**Object Oriented Programming**
Class Fundamentals.
Object & Object reference.
Memory architecture of java program.
Object Life time & Garbage Collection.
Creating and Operating Objects.
Constructor & initialization code block.
Access Control, Modifiers, methods
Nested, Inner Class & Anonymous Classes
Abstract Class & Interfaces
Defining Methods, Argument Passing Mechanism
Method Overloading, Recursion.
Dealing with Static Members. Finalize() Method.
Native Method. Use of “this” reference.
Use of Modifiers with Classes & Methods.

Generic Class Types

**Extending Classes and Inheritance**

Use and Benefits of Inheritance in OOP

Types of Inheritance in Java

Inheriting Data Members and Methods

Role of Constructors in inheritance

Overriding Super Class Methods.

Use of “super”.

Polymorphism in inheritance.

Type Compatibility and Conversion

Implementing interfaces.

**Package**

Organizing Classes and Interfaces in Packages.

Package as Access Protection

Defining Package.

CLASSPATH Setting for Packages.

Making JAR Files for Library Packages

Import and Static Import

Naming Convention For Packages

**Exception Handling:**

The Idea behind Exception

Exceptions & Errors

Types of Exception

Control Flow In Exceptions

Use of try, catch, finally, throw, throws in Exception Handling.

In-built and User Defined Exceptions
Checked and Un-Checked Exceptions

Arrays & Strings

Threads & Synchronization

Serialization

Collections

File I/O Basics

Event Handling

Introduction to J2EE

J2EE Overview

Why J2EE?

J2EE Architecture

J2EE APIs

J2EE Containers

Java Server Technologies

Servlets

Web Application Basics.

Architecture and challenges of Web Application.

Introduction to servlet

Servlet life cycle

Developing and Deploying Servlets

Exploring Deployment Descriptor (web.xml).

Handling Request and Response

Initializing a Servlet

Accessing Database

Servlet Chaining

Session Tracking & Management

Dealing with cookies
Transferring Request
Accessing Web Context
Passing INIT and CONTEXT Parameter
Sharing information using scope object
Controlling concurrent access
User Authentication
Filtering Request and Response
Programming Filter
Filter Mapping
Servlet Listeners
Java Server Pages:

**JSP**

Basic JSP Architecture
Life Cycle of JSP (Translation, compilation)
JSP Tags and Expressions
Role of JSP in MVC-2
JSP with Database
JSP Implicit Objects
Tag Libraries
JSP Expression Language (EL)
Using Custom Tag
JSP Capabilities:
Exception Handling
Session Management
Directives
JSP with Java Bean

**JDBC**
What is JDBC?
Types of JDBC
Connecting to Database
Retrieving and Updating data

SQL
MySQL
HTML
CSS
JavaScript
Ajax

Hibernate
What is Hibernate?
Understanding EntityRelationShip
Writing Entities
Mapping Entities
Synchronizing with Database
Using Hibernate with Applications

Spring IOC module