JAVA / J2EE Course Syllabus

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