G++ IN ADVANCE JAVA

COURSE DURATION:240 HRS

Introduction to Java

- Creation of Java
- Features of Java
- Overview of Programming with JDK
- Discuss the Java Security Model
- Describe Java Virtual Machine
- Garbage Collection and Memory Management
- Sample Programs

Object Oriented Programming

- Structures Programming technique
- Object Oriented Programming and its advantages
- Define Objects and Classes and the relation between them
- Explain terms-Attributes, Methods, Construction, Destruction and Persistence
- Discuss Data Abstraction
- Discuss Data Encapsulation
- Explain Polymorphism
- Explain Inheritance

Basics of Java

- Discuss the data types available in Java and utilize them in applications
- Describe the various control structures and loops available in Java

- Explain and utilize the various operators present in Java
- Explain an Array

Data Types, Modifiers, Expressions and Operations

Arrays and Flow Control Statements

Methods and Classes

- Describe class and inheritance of classes
- Explain and Object and to declare one
- Explain the concept of Constructors and its relation with respect to class
- Methods
- "this" keyword
- Concept of Inner class

Packages and Interfaces

- Purpose of Modifies and its types
- Explain Package
- List the various Packages available in Java
- Design user defined Package
- Explain the term interface and how to implement it
- Practice creating an interface and implement it

String and String Buffer

- String Class
- Various Methods of the String class and how to use them
- Explain StringBuffer class
- Discuss the methods of the StringBuffer class and its usage

Java Applets

- Difference between Applications and Applets
- Understand the Applet Class
- Create, run and execute Applets
- Understand the Security Restrictions applied on Applet
- Identify the various activities in an applet
- Identify how to use Components and layouts in Applets

Graphics

- Basics of Graphic System
- Explain and utilize the following geometric figures in applications
  - o Lines
  - o Ovals
  - o Rectangle and RoundRectangle
  - o 3DRectange and Arc
- Discuss Color Control and how to use it to fill color in the container and the images in it
- Disuss the Font Control and how to play around with it
- Explain the FontMetrics class and its purpose

Basic Graphical User Interface Components (Abstract Window ToolKit (AWT)

- Describe the concept of GUI
- Discuss the following Handle events using the following listeners
  - o ActionListener
  - o ItemListener
  - o WindowListener
  - o ComponentListener
  - o MouseListener
  - o MouseMotionListener
- Describe the following components and how to apply them in the container
  - o Label
  - o List
  - o Button
  - o Checkbox
  - o Choice
  - o TextField
  - o TextArea
  - o FileDialog

Advanced GUI Components

- Discuss event handling related to mouse events
- Describe the LayoutManager class and implement the types of layout in the application
- Discuss the various containers and how to implement them
- Understand Menus and apply them in the frame

Exception Handling

- Discuss the purpose of Exception Handing in Java
- Explain the types of exception in Java

Core-java

- Describe the use of try and catch
- Explain the use of throws keyword
- Explain the purpose of throw
- Describe the finally keyword

Multithreading

- Describe Multithreading
- Creating and Managing Threads
- Discuss the life cycle of threads
- Understand the concept of synchronization
- Explain how to set the priorities of thread
- Understand what a daemon thread does

Advanced Java J2EE

Swing Programming (Graphical User Interface)

- Understand difference between Swing and AWT programming
- Define Swing components
- List Swing Packages
- List the sub-classes of the JComponent class
- Explain how swing handles events
- Use JFC to write swing applets
- Understand the concept of "Look and Feel"

SQL Database

- SQL Commands
- Data Definition (DDL) Commands
- Data Manipulation (DML) Commands
- Transaction Control (TCL) Commands
- Aggregate Functions

JDBC(Java Database Connectivity)

- Steps to connect java and Database
- SQL Statements
- Use JDBC to access a database
- Set up a connection to the database
- Create and execute SQL Statements
- Describe the Result Set object

Servlet Technology

- Request Object
- Response Object
- Session Management
- http Session
- Cookies
- Hidden form field
- URL Rewriting
- Request Dispatcher

Hibernate

- Hibernate framework
- Introduction ORM
- Hibernate Mapping
- Hibernate One-to-One Mapping
- Hibernate Query Language (HQL)
- HQL Select Query
- HQL Update, Delete Queries

Introducing Java Server Pages

- The Java2 Enterprise Edition
- JSP
- How does JSP does its stuff
- Comparison with existing technologies
- Future of the Platform

The Basics

- What do JSP contains?
- JSP Life Cycle
- Directives
- Scripting Elements and Implicit Objects

JSP Directives

- Directive Basics
- The page Directive
- The taglib Directive
- The include Directive

JSP Standard Actions

- JSP Standard Actions Are Built-in Tags
- Actions for Working with JavaBeans
- Including JSP Output via <jsp:include>
- Transferring Control between JSPs
- Specifying Parameters for Other Actions

Beneath JSP

- Web Application Server Architecture
- Important Servlet API Features
- Session tracking
- Form data parsing

JSP and Java Beans

- Introduction
- Java Beans
- Java Beans and JDBC
- Creating Sample Application

JSP Sessions

- Persistent Connections
- Working with Cookies and JAVA
- Sessions in Action
- Sessions, HTTPS and JSP

Error Handling with JSP

- Types of Errors and Exceptions
- JSP Specific Exception Classes
- An Example Web Application

Java Database Connectivity and Connection Pooling

- Relational Database Management Systems
- Alien Object Model
- Why all the Driver Types?
- How JSP and JDBC fit together
- The Bigger J2EE Picture
- Coding a simple JSP using JDBC
- More Advanced JDBC
- Multiple Users and the Need for the Connection Pooling

SP Tag Libraries and JSTL

- The Need for a Tag Extension Mechanism
- The Simplest tag
- JSP Standard Tag Library
- Resources

Debugging JSP

- Why Debugging JSP is so Hard
- Different Types of Errors
- Debugging Techniques
- Future Directions

JSP Architecture

- Code Factoring and Role Separation
- Architectures
- The Page-Centric Approach
- The Dispatcher Approach
- Servlets versus JSPs

JSPs and Servlets

- A JSP is a Servlet
- JSP Compilation

Java Server Faces

- Configuring a JSF Project
- Getting Started with JSF
- JSF Lifecycle
- Validating Data
- Converting Data
- Handling Events with Listeners

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