

JAVA



ELEGANT  TRAINING

JAVA

Pre - requisites

Basic Understanding of C++ is enough to learn this course



JAVA



About

JAVA

Java is a high-level, object-oriented programming language known for its platform independence, security, and scalability. It follows the “Write Once, Run Anywhere” (WORA) principle, meaning Java code can run on any system with a Java Virtual Machine (JVM).

Approved by KHDA





Module 1: Introduction to Java

History & Features of Java

Installing Java Development Kit (JDK) & Setting up Environment (IDE: Eclipse, IntelliJ, NetBeans)

Writing & Running a Simple Java Program

Understanding Java Virtual Machine (JVM), Java Runtime Environment (JRE), and Java Development Kit (JDK)



Module 2: Java Basics

Variables & Data Types

Operators (Arithmetic, Relational, Logical, Bitwise, Assignment)

Type Casting & Type Conversion

Input/Output in Java (Scanner, BufferedReader)

Comments & Best Coding Practices

Module 3: Control Flow & Loops

Conditional Statements (if, if-else, switch-case)

Looping Statements (for, while, do-while)

Break & Continue Statements

Nested Loops

Module 4: Functions & Methods

Defining & Calling Methods

Method Overloading

Recursion in Java

Pass by Value vs. Pass by Reference

Module 5: Arrays & Strings

One-Dimensional & Multi-Dimensional Arrays

Array Operations (Sorting, Searching)

String Manipulation (String Class, StringBuffer, StringBuilder)

String Methods & String Comparison

Module 6: Object-Oriented Programming (OOP) in Java

Classes & Objects

Constructors & Destructors

Access Modifiers (Public, Private, Protected, Default)

Static Keyword (Methods & Variables)

this & Super Keywords

Inheritance (Single, Multilevel, Hierarchical, Multiple using Interfaces)

Method Overriding & Polymorphism

Abstract Classes & Interfaces





Module 7: Exception Handling in Java

Types of Exceptions (Checked & Unchecked)

Try, Catch, Finally Blocks

throw & throws Keywords

Custom Exceptions

Module 8: Java Collections Framework (JCF)

Introduction to Collection API

List (ArrayList, LinkedList, Vector, Stack)

Set (HashSet, LinkedHashSet, TreeSet)

Map (HashMap, LinkedHashMap, TreeMap)

Queue (PriorityQueue, Deque)

Iterators & Streams

Module 9: Multithreading & Concurrency

Thread Class & Runnable Interface

Thread Synchronization

Inter-thread Communication

Deadlocks & Thread Pooling

Module 10: File Handling in Java (I/O Streams)

File Handling (Reading & Writing)

Byte & Character Streams

Serialization & Deserialization

Module 11: JDBC (Java Database Connectivity)

Introduction to Databases (MySQL, PostgreSQL)

Connecting Java with Databases (JDBC API)

CRUD Operations (Create, Read, Update, Delete)

Prepared Statements & Transactions

Module 12: Java GUI (Graphical User Interface) Development

Swing Components (JFrame, JPanel, JButton, JTextField, JLabel)

Event Handling & Listeners

Layout Managers

JavaFX Basics



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