

Core Java Course Content

Introduction

- ✚ Programming language Paradigms and Types,
- ✚ Computer Programming Hierarchy,
- ✚ How Computer Architecture Affects a Language? ,
- ✚ Why Java? ,
- ✚ Flavors of Java,
- ✚ Java Designing Goal,
- ✚ Role of Java Programmer in Industry,
- ✚ Features of Java Language,
- ✚ JVM –The heart of Java ,
- ✚ Java's Magic Bytecode.

The Java Environment

- ✚ Installing Java,
- ✚ Java Program Development,
- ✚ Java Source File Structure,
- ✚ Compilation,
- ✚ Executions.

Basic Language Elements

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

Object Oriented Programming

- ✚ Class Fundamentals,
- ✚ Object & Object reference,
- ✚ 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,
- ✚ Mutator Methods Cloning Objects,

- ✚ Shallow and deep cloning,
- ✚ Generic Class Types.

Extending Classes and Inheritance

- ✚ 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
- ✚ Naming Convention for Packages.

Exception Handling

- ✚ The Idea behind Exception,
- ✚ Exceptions & Errors,
- ✚ Types of Exception,
- ✚ Control Flow in Exceptions,
- ✚ JVM reaction to Exceptions,
- ✚ Use of try, catch, finally, throws,
- ✚ Throws in Exception Handling,
- ✚ In-built and User Defined Exceptions,
- ✚ Checked and Un-Checked Exceptions.

Array & String:

- ✚ Defining an Array,
- ✚ Initializing & Accessing Array,
- ✚ Multi –Dimensional Array,
- ✚ Operation on String,
- ✚ Mutable & Immutable String,
- ✚ Using Collection Bases Loop for String,
- ✚ Tokenizing a String,
- ✚ Creating Strings using StringBuffer .

Thread:

- ✚ Introduction to Threads ,
- ✚ Needs of Multi-Threaded Programming ,
- ✚ Thread Life-Cycle, Thread Priorities ,
- ✚ Synchronizing Threads,
- ✚ Inter Communication of Threads ,
- ✚ Critical Factor in Thread –DeadLock,

A Collection of Useful Classes:

- ✚ Utility Methods for Arrays ,
- ✚ Observable and Observer Objects ,
- ✚ Date & Times ,
- ✚ Using Scanner Regular Expression,
- ✚ java.io Package,
- ✚ I/O Capabilities ,
- ✚ Understanding Streams,
- ✚ The Classes for Input and Output,
- ✚ The Standard Streams,
- ✚ Working with File Object,
- ✚ File I/O Basics,
- ✚ Reading and Writing to Files,
- ✚ Buffer and Buffer Management,
- ✚ Reading and Writing Operations with File Channel, Serializing Objects.

GUI Programming:

- ✚ Designing Graphical User Interfaces in Java,
- ✚ Components and Containers,
- ✚ Basics of Components,
- ✚ Using Containers,
- ✚ Layout Managers,
- ✚ AWT Components,
- ✚ Adding a Menu to Window,
- ✚ Extending GUI Features Using Swing Components,
- ✚ Java Utilities (java.util Package)
- ✚ Collections of Objects in framework ,
- ✚ Understanding Hashing, Use of ArrayList & Vector.

Event Handling:

- ✚ Event-Driven Programming in Java,
- ✚ Event- Handling Process,
- ✚ Event-Handling Mechanism,
- ✚ The Delegation Model of Event Handling,
- ✚ Event Classes,
- ✚ Event Sources,
- ✚ Event Listeners,
- ✚ Adapter Classes as Helper Classes in Event Handling.

Database Programming using JDBC:

- ✚ Introduction to JDBC,
- ✚ JDBC Drivers & Architecture,
- ✚ CURD operation Using JDBC,
- ✚ Connecting to non-conventional Databases.