

## CORE JAVA

### **Session 1: Introduction**

- ✓ Why JAVA and its Paradigms
- ✓ Difference between JAVA & Others (C, C++)
- ✓ JAVA History and Features
- ✓ JAVA programming format
- ✓ Types of Application JAVA

### **Session 2: Installation & First Program**

- ✓ How to install JAVA
- ✓ Environment Variables
- ✓ JVM Architecture
- ✓ JDK and its usage (Java Compiler, Java Runtime, Java Debugger, Java doc)
- ✓ Difference between applications and applets
- ✓ Java program development
- ✓ Java source file structure
- ✓ Java program compilation & execution (Via cmd and Eclipse)

### **Session 3 & 4: Basics of Java programming**

- ✓ Data types, Variables, Keywords and Identifiers
- ✓ Expression
- ✓ Operators
- ✓ Naming convention in Java

### **Session 5 & 6: Control Flow**

- ✓ Selection Statements
  - Simple if statement
  - The if-else statement
  - The switch statement
  - Nesting of selection statements
- ✓ Transfer Statement
- ✓ The break statement
- ✓ The return statement
- ✓ Iteration Statements
  - The while statement
  - The do-while statement
  - The for(;;) statement
  - The foreach statement
- ✓ Labeled statement
- ✓ The continue statement

### **Session 7 & 8: Arrays**

- ✓ Defining an Array
- ✓ Initializing & Accessing Array
- ✓ Multi - Dimensional Array
- ✓ Jig-Jag Array & Command line Arguments

### **Session 9 & 10: JAVA.LANG Package**

- ✓ System class (Taking input from console)
- ✓ Math class (How to generate a random number)
- ✓ Wrapper classes
- ✓ Object class
- ✓ String, StringBuilder, StringBuffer & StringTokenizer

### **Session 11 to 20: OOPs Concepts**

- ✓ Class, object and instances
- ✓ OOPs and its benefits
- ✓ Access Specifiers, Static keyword, Constructors and chaining using this()
- ✓ Polymorphism (Over loading & Over Riding)
- ✓ Encapsulation and Interfaces
- ✓ Garbage Collection
- ✓ Object Lifetime
- ✓ Initialization Blocks
- ✓ Memory Management
- ✓ Inner Classes (Member inner class, static
- ✓ Inheritance
- ✓ The super key word
- ✓ The "this" keyword, Non-static / instance members & functions
- ✓ Abstraction
- ✓ Abstract classes
- ✓ Reachable Objects
- ✓ Package
- ✓ Organizing Classes and Interfaces in Packages
- ✓ Packages as Access Protection
- ✓ Defining Package

- inner class, local inner class and Anonymous inner class)
- ✓ Variable length arguments
- ✓ CLASSPATH setting for Packages
- ✓ Compilation of package classes

### **Session 21,22 Exception Handling**

- ✓ Exceptions & Errors
- ✓ Types of Exception & Exception classes
- ✓ Use of try , catch, finally, throw, throws in Exception handling
- ✓ Exception handling mechanism
- ✓ Creating your own Exceptions

### **Session 23,24,25 File & Stream Handling(java.io package)**

- ✓ Input and Output
- ✓ Byte Streams
- ✓ Object Serialization
- ✓ The File Class
- ✓ Character Streams

### **Session 26,27,28,29 Multithreading**

- ✓ Multithreaded programming in Java
- ✓ java.lang.Runnable and java.lang.Thread
- ✓ Thread Life Cycle
- ✓ Synchronization
- ✓ Multithreading: advantages and issues
- ✓ Thread Creations
- ✓ Life Cycle Methods
- ✓ Wait() notify() notify all() methods

### **Session 30,31,32,33,34,35 Collections and Maps**

- ✓ Java Generics
- ✓ Collections classes(Stack, Vector, Hash table, Enumeration)
- ✓ List and Subtypes
- ✓ Set and Subtypes
- ✓ Miscellaneous topics
- ✓ Introduction to Collection
- ✓ Collection Interfaces and class
- ✓ Map and Subtypes
- ✓ Various Utility classes(Date, Time, Calendar Scanner etc. )

### **Session 35-38 AWT**

- ✓ Introduction
- ✓ Choice, List, Menu, TextField, TextArea
- ✓ Listeners & Event Handling
- ✓ Individual Components Label, Button, CheckBox, RadioButton etc
- ✓ Layouts

### **Session 39-41 Swing**

- ✓ Introduction
- ✓ Components hierarchy
- ✓ Individual Swing components JLabel, JButton, JTextField, JTextArea
- ✓ Listeners & Event Handling
- ✓ Diff b/w awt and swing
- ✓ Panes
- ✓ JScroll Pane, JTable

### **Session 42 Applet**

- ✓ The Applet Class
- ✓ Applet Context, paint(), repaint(), update() , getGraphics()
- ✓ Running applet using command prompt
- ✓ Passing parameters, embedding in HTML
- ✓ Integrating into distributed application

### **Session 43-44 Networking**

- ✓ Introduction
- ✓ Socket and ServerSocket
- ✓ URL, InetAddress etc.
- ✓ TCP/IP and UDP
- ✓ Client – Server communication
- ✓ Datagram Packet & Datagram Socket

### **Session 45 Reflection API**

- ✓ Introduction
- ✓ Reflection methods to get information about

class modifiers, fields, methods, constructors, super classes etc.

### **Session 46-End Project Development**

- ✓ Requirement Analysis
- ✓ Working with packages
- ✓ Designing
- ✓ Testing

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