

# JAVA

## FOR BEGINNERS



## 3 MONTHS

### INTRODUCTION TO JAVA

- Why Java was Developed
- Application Areas of Java
- History of Java
- Platform Independency in Java
- USP of Java: Java Features
- Sun-Oracle Deal
- Different Java Platforms
- Difference between JDK, JRE, JVM
- Java Versions
- JVM Architecture
- Installing Java on Windows
- Understanding Path Variable: Why Set Path

### CREATING FIRST JAVA PROGRAM

- Understanding Text Editors to Write Programs
- How to compile java file
- Byte Code and class file
- How to run class file

### JAVA LANGUAGE FUNDAMENTALS

- Identifiers
- Keywords
- Variables
- Literals
- Data Types
- Operators
- Comments
- Looping Statements
- Condition Statements
- Type Casting

### OOP IMPLEMENTATION (PIE)

- Why OOP
- OOP Concepts with Real life examples
- Class & its Syntax
- Object & its Syntax
- Reference Variable
- Constructors
- Instance(Non-Static) & Static Variables
- Instance(Non-Static) & Static Methods
- this Keyword and its usages
- Object & Static Initializers(Anonymous Blocks)
- Understanding '+' Operator

- Inheritance & its Syntax
- Types of Inheritance
- Object Class as Root of Java Class Hierarchy
- Variable Hiding
- Method Hiding
- Method Overriding
- Method Overloading
- Super keyword and its usages
- Final keyword and its usages
- Constructor Chaining
- Upcasting and Downcasting
- Static & Dynamic Binding
- Run Time Polymorphism
- Abstract Keyword (Abstract classes and methods)
- Understanding Interfaces
- Implementation of Encapsulation
- Association with Implementation

## **PACKAGES**

- Understanding Packages
- Setting Class path
- Reading Input from Keyboard
- Access Modifiers

## **NESTED TYPES**

- Static Nested Class
- Non-static Nested Class
- Local Class
- Anonymous Class
- Nested Interface

## **ARRAYS**

- General Definition of Array
- Advantages from Array
- Arrays in Java
- 1-d Arrays
- 2-d Arrays
- Jagged Arrays
- Array of reference type
- Operations on Arrays

## **COMMAND LINE ARGUMENTS AND WRAPPER CLASSES**

- How to read command line arguments
- Wrapper Classes
- Parsing of Numeric Strings
- String representation of Primitives

## **EXCEPTION HANDLING**

- Types of Runtime Errors
- Understanding Exceptions
- Exception Class Hierarchy
- Try & Catch Blocks
- Patterns of Catch Block
- Nested Try statements
- Throw, throws and finally
- Creating Custom Exceptions
- Checked & Unchecked Exceptions
- Assertion

## **WORKING WITH STRINGS**

- What is String
- String Class
- Creating String Object
- Operations on String
- String Buffer Class and it's Methods
- Difference between String and StringBuffer class
- String Builder Class and it's Methods
- Difference between StringBuffer and StringBuilder

## **SWING**

- Introduction to AWT
- Introduction to Swing Components
- Look And Feel of Swing Components
- MVC Architecture of Swing Components
- Working with Image
- Advance Swing Components
  - JOptionPane,JTree,JTable,JTabbedPane
  - JFileChooser,JcolorChooser
- Menu Components
  - JMenu
  - JMenuItem
  - JMenuBar

## **MULTITHREADED PROGRAMMING**

- Multitasking: Why Concurrent Execution
- Multiprocessing v/s Multithreading
- Main Thread (Default Java Thread)
- Creating Child Threads and understanding context switching
- Thread States
- Thread Group
- Thread Synchronization: Methods and Blocks
- Inter-Thread communication
- Daemon Threads
- Deadlock

## **I/O STREAMS**

- What is I/O
- Why Need Streams
- Byte Streams and Character Streams
- Read/Write operations with file
- Scanner Class
- Object Serialization& Deserialization
- Transient keyword
- File Class and it's Methods

## **SOCKET PROGRAMMING**

- Understanding Fundamentals of a Network
- Socket and ServerSocket Classes
- InetAddress Class
- DatagramSocket and DatagramPacket Classes
- URL,URLConnection,HttpURLConnection Classes

## REFLECTION

- Understanding the Need Of Reflection
- Getting information about class's modifiers, fields, methods, constructors and super classes
- Finding out constant and method declaration belong to an interface
- Creating an instance of the class whose name is not known until runtime
- Getting and setting values of an object's field if field name is unknown until runtime
- Invoking a method on an object if the method is unknown until runtime
- Invoking Private Methods

## EXTENDED & UTILITY CONCEPTS

- Generics
- Lambda Expression
- Annotations
- Object Cloning
- Vargs
- Static-import
- Enum
- Static, Default and Private Methods of Interface
- Var Type
- Java Modules

## COLLECTIONS FRAMEWORK

- What is Collection?
- What is Framework?
- Collections Framework
- Core Interfaces
- Collection, List, Queue, Deque
- Set, NavigableSet, SortedSet
- Map, NavigableMap, SortedMap
- Core Classes
- ArrayList, LinkedList, PriorityQueue, ArrayDeque
- HashSet, LinkedHashSet, TreeSet,
- HashMap, IdentityHashMap, WeakHashMap, LinkedHashMap, Tree Map
- Accessing a Collection via an Iterator
- Accessing List via ListIterator
- Accessing a Collection via for each loop
- Working with User Defined Objects
- The Comparator and Comparable Interfaces
- The Legacy classes and Interfaces.
- Enumeration, Vector, Stack
- Hashtable, Properties

## DATE & TIME API

- java.util.Date
- java.util.Calendar
- java.sql.Date

## JODA API

- java.time.LocalDate
- java.time.LocalDateTime
- java.time.LocalTime

## SYSTEM PROPERTIES & INTERNATIONALIZATION (I18N)

- Understanding Locale
- Resource Bundle
- Usage of properties file
- Fetching text from Resource Bundle
- Displaying the text in HINDI
- Displaying date in Hindi

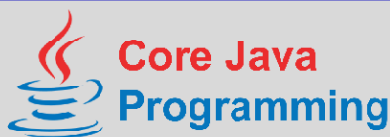
## INTRODUCTION TO SQL(PROJECT BASED)

### DATABASE PROGRAMMING USING JDBC

- Need Of JDBC
- JDBC Drivers
- Statement, PreparedStatement, CallableStatement
- Scrollable and Updatable ResultSet
- Batch Updates
- Transaction
- Metadata

### PROJECT CLASSES

- Front End Coding
- Form Designing
- Back End Coding
- Database Designing
- Connecting forms to database
- Writing Business Logic



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