Course Outline : Core Java

Introduction

- Java language & platform
- History and features
- Java PC set-up, about JDK/JRE/JVM
- Environment variable and command interface
- Compiling and Running first Hello World Program

Syntax & Grammar

- Lexical Structure
- Naming Conventions
- Comments and Formatting
- Command Line Arguments
- Data Types and Variables
- Literal Constants
- Operators and Expressions

Control Flow and Enum Constants

- Conditions, Statements, Blocks
- Conditional Statements
- Loops and Switches
- Continue, Break and Return
- Java Arrays
- Enum Types and its application

Class, Object and Encapsulation

- OOP Concepts
- Class and Objects
- Constructor and Encapsulation
- Properties and Methods
- Types of Methods
- package and import
- access modifiers and their uses
- Getter/Setter method concept
- Object class and override its methods.

Inheritance & Polymorphism

- Inheritance
- Inheritance in Java
- Abstract Classes
- Interfaces
- Polymorphism: Dynamic Binding
- Casting Objects

Inner Class

- Inner class
- Member inner class
- Nested inner class
- Static inner class

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Class Libraries

- Type Conversion and Casting
- Type Wrappers
- System Class & Math Class
- NumberFormat Class
- DecimalFormat Class
- BigInteger, BigDecimal class

String Manipulation

- String Class and its Methods
- StringBuffer Class
- StringBuilder Class
- String Tokenizers
- Regular Expressions
- String Applications
- Array and Arrays class

Date and Time

- Locale, Date & Calendar Class
- DateFormat, SimpleDateFormat Class
- Joda-time Library and its uses

Generics & Exceptions

- Java Generics Basic
- Class and method level Generic
- Handling Exceptions
- throws and throw
- try with resource

- Effective Exception Hierarchy

Multithreading

- Multithreading in Java
- Thread and process
- Thread Life Cycle
- Joining Thread, Thread Priority
- Thread Pool, Thread Group
- Shutdown Hook, Garbage Collection
- Synchronization, Runtime class

File I/O

- File Management
- File Streams
- Data Streams
- Stream Tokenization
- Random Access Files
- File Class
- Scanner Class

Collections and Generics

- Hierarchy and methods
- Iterator interface
- List: ArrayList, LinkedList, Vector
- Set: HashSet, LinkedHashSet, TreeSet

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- Map: HashMap, TreeMap, LinkedHashMap
- Iterator/ ListIterator

JDBC

- Introduction and JDBC Architecture
- JDBC Driver and its types(Mysql, Oracle)
- Features of JDBC
- Accessing Database using Java and JDBC
- Enhanced SQL Exception Handling
- Relational Database Concepts
- Understanding Common SQL Statements

Swing GUI Widgets

- Containers, Windows, Panes
- JFrame and JPanel
- Dialog Boxes
- Labels, Icons and Buttons
- Basic Event Listeners
- Bounded-Range Components
- Checkboxes

- Radio Buttons
- Lists, ComboBoxes, Spinners
- Text and Password Fields
- TextAreas and JTable

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