

### 1: Getting Started with Basics of Java

- Java - What, Where and Why?
- History and Features of Java
- Internals of Java Program
- Difference between JDK, JRE and JVM
- Internal Details of JVM
- Variable and Data Type
- Unicode System
- Naming Convention
- The Structure of Java Code
- How to Run your Java Programs
- Printing to the Output Window

### 2: OOPS Concepts

- Advantage of OOPs
- Object and Class
- Method Overloading
- Constructor
- Static variable, method and block
- this keyword
- Inheritance (IS-A)
- Aggregation and Composition (HAS-A)
- Method Overriding
- Covariant Return Type
- super keyword
- Instance Initializer block
- final keyword
- Runtime Polymorphism
- static and Dynamic binding
- Abstract class and Interface
- Downcasting with instanceof operator
- Package and Access Modifiers
- Encapsulation
- Object Cloning
- Java Array
- Call By Value and Call By Reference
- Strictfp keyword
- Creating API Document

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### 3: String Handling

- String: What and Why?
- Immutable String
- String Comparison
- String Concatenation
- Substring
- Methods of String class
- StringBuffer class
- StringBuilder class
- Creating Immutable class
- toString method
- StringTokenizer class
- Upper and LowerCase
- The compare Method
- The equals Method
- The replace Method
- Printing Formatted Strings

### 4 : Exception Handling

- Exception Handling: What and Why?
- try and catch block
- Multiple catch block
- Nested try
- finally block
- throw keyword
- Exception Propagation
- throws keyword
- Exception Handling with Method Overriding
- Custom Exception

### 5 : Multithreading

- Multithreading : What and Why?
- Life Cycle of a Thread Creating Thread
- Thread Scheduler
- Sleeping a thread
- Joining a thread
- Thread Priority
- Daemon Thread
- Thread Pooling
- Thread Group
- ShutdownHook
- Performing multiple task by multiple thread
- Garbage Collection
- Runnable class

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## 6 : Control Flow

- If Statements in Java
- If Else Statements
- Boolean Values
- Switch Statements
- Java for Loops
- Java While Loops

## 7 : Arrays in Java

- Java Arrays
- Arrays and Loops
- Sorting Arrays
- Arrays and Strings
- Multi -Dimensional Arrays
- Array Lists

## 8: Java Methods

- Java Methods
- Calling your Java Methods
- Passing Values to Methods
- Multiple Method Parameters

## 9: Synchronization

- Synchronization : What and Why?
- Synchronized method
- Synchronized block
- Static synchronization
- Deadlock
- Inter-thread Communication
- Interrupting Thread

## 10: Java Form Controls

- Java Forms
- The Different Form Views in NetBeans/Eclipse
- Add a Text Box to a Java Form
- Add a Button to the Form
- Button Properties
- Java Form Events
- Java and Combo Boxes
- Java Check Boxes
- Radio Buttons
- Adding Menus to a Java Form
- Open File Dialogue Boxes
- Opening Files
- Save File Dialogue Boxes

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## **11: Java and Databases**

- Java and Databases
- Creating a Database with Java
- Adding Records to Table
- SQL Commands
- Connect to a Database with Java code
- Connecting to the Table

## **12: Databases and Java Forms**

- Databases and Java Forms
- Database Scrolling Buttons
- Move Back Through the Database
- Move to the First and Last Records
- Update a Record
- Add a New Record
- Save a New Record
- Delete a Record from a Database

## **13: A Java Calculator Project (This is Done By Student Himself)**

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