

<b>Workshop</b>	
Name	<b>Synergetics - Standard -Java SE-7</b>
Duration	7 days
Objective	<p>Key skills you will gain upon completion of this program include:</p> <ul style="list-style-type: none"> <li>▪ Understanding &amp; working with basic construct</li> <li>▪ Working with Oops</li> <li>▪ Application Development using Oops.</li> <li>▪ Handling Errors and Exception</li> <li>▪ Understanding and using in-built classes;</li> <li>▪ Working with collections &amp; choosing right collection in a scenario;</li> <li>▪ Working with threads, and effectively using Concurrency API;</li> <li>▪ Working with files, understanding and using important concepts like Serialization;</li> <li>▪ Understanding and working with JDBC API for different databases;</li> <li>▪ Understanding best practices and standards;</li> </ul>
Participants' Entry Profile	<p>The participants need not have any prior exposure to Java programming language. Prior familiarity with some other programming language (such as C++ or C) would be useful, but it is not mandatory. Knowledge and understanding of <b>SQL and Procedures</b> is mandatory.</p>
Training Methodology	<p>The workshop will follow Synergetics methodology of</p> <p style="text-align: center;"><b>Concept Visualization</b> <b>Active Experimentation</b> <b>Application Development.</b></p> <p>The workshop will be 100% Hands-On with each participant having access to system during the session</p>

<b>Setup Requirements</b>	
<b>Hardware and Software Requirements</b>	<p>Participant's as well as Trainer's Machine are required to have :</p> <p><b>Hardware</b></p> <ul style="list-style-type: none"> <li>Intel Core i3 2.2 GHz</li> <li>CD Rom Drive</li> <li>80 GB HDD</li> <li>LCD Color Monitor</li> <li>2 GB RAM</li> <li>LAN Connectivity</li> </ul> <p><b>Software</b></p> <ul style="list-style-type: none"> <li>Windows XP or 7</li> <li>Internet Explorer 10 or above/Chrome/Firefox</li> <li>Java SDK 1.7.x</li> <li>Java Docs for 1.7.x</li> <li>JDBC Driver for Oracle (ojdbc6.jar)</li> <li>Oracle 10g/MS-SQL</li> <li>Eclipse 4.0.x onwards</li> <li>MS Office 2007 onwards</li> </ul>
<b>Training Lab Requirements</b>	<ul style="list-style-type: none"> <li>Whiteboard 6 feet by 4 feet (minimum)</li> <li>Whiteboard markers – Red, Blue, Green, Black</li> <li>Video Projector (1024 X 768 resolutions)</li> </ul>

**Course Contents****Day 1**➤ **Getting started**

- Introduction to Java
- Writing, compiling and running a program
- Platform Independency in Java
- Integrated Development Environment
- Some important terms in Java

➤ **Basic Language Constructs**

- Naming conventions in Java
- Variables and data types
- Operators (arithmetic, assignment, relational, logical and bitwise)
- Promotion and demotion rules for operators
- Looping (while, do...while, for loops)
- Conditional statements (if...else..., switch case)
- break and continue statements
- Reference Variables
- Arrays
- **New Features of Java 7**
  - Switch with String
  - Underscore operator

➤ **Classes and Objects**

- Classes and objects
- Access control
- Constructor and Init block
- Overloading
- Static methods and fields
- Garbage collection -finalize() method
- The toString method

**Day 2**➤ **Association Relationship**

- Association
- Aggregation
- Composition
- Relationship exercising using setters/constructors

- **Extending Classes**
  - Inheritance
  - Protected keyword
  - Constructors in extended classes
  - Overriding methods
  - Polymorphism
  - Making Methods and Classes Final
  
- **Abstract Classes**
  - Abstract classes and methods
  - Extending abstract class
  - Abstract class and Polymorphism

**Day 3**

- **Interfaces and Loose coupling**
  - Declaring interfaces
  - Implementing interfaces
  - Extending interfaces
  - Loose coupling using interfaces
  
- **Nested Classes**
  - Inner classes
  - Anonymous inner classes
  
- **Packages and imports**
  - Creating packages
  - Naming packages
  - Package Access
  - Packages and class path
  - Importing packages
  - Static imports

**Day 4**

- **Exception Handling**
  - Checked exceptions
  - Unchecked exceptions
  - The “try-throw-catch” structure
  - The “finally” clause
  - Custom Exception
  - Exception chaining

- **New Features of Java 7**
  - Try with Resources
  - AutoCloseable
  - Catch Block Handling Multiple Exceptions
  
- **Some Useful In-Built Classes**
  - The Object class
  - The String class
  - The StringBuffer class
  - The StringBuilder class
  
- **Wrapper classes and Auto-Boxing**
  - Enumeration
  - Wrapper classes
  - Auto Boxing and Un-Boxing

<b>Day 5</b>
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- **Collections and Generics**
  - Dynamic Collections vs. Arrays
  - Using Generics: Achieving type safety
  - The Collections API
  - The Collection<E> and List<E> Interfaces
  - The ArrayList<E> and LinkedList<E> Classes
  - Looping Over Collections: Iterable<E>
  - Collecting Primitive Values: Auto-Boxing
  - Iterators and the Iterator<E> Interface
  - Maps and the Map<K,V> Interface
  - Sorted Collections
  - The SortedSet<E> and SortedMap<K,V> Interfaces
  - The Collections Class Utility
  - Bounded types and wildcard arguments
  - New features of Java 7
    - Automatic Type Inference during the Generic Instance Creation
  - **Best Practices with Collection**
  
- **The Input and Output Classes**
  - Types of Input and Output Streams
  - Byte-based stream
  - Character-based stream
  - Reader and Writers
  - PrintWriter

**Day 6****➤ Java Serialization**

- The Challenge of Object Serialization
- Serialization API
- Serializable Interface
- ObjectOutputStream and ObjectOutputStream
- The Serialization Engine
- Transient Fields
- Serialization in Inheritance

**➤ Threads and Concurrency utilities**

- Understanding threads and Concurrency framework
- Creating worker thread and task
- Implementing Executor framework
- Thread life cycle
- Scheduling threads- Priorities, sleep(), join()
- Java Memory Model and Object Synchronization
- Synchronized block, method and Semaphore
- Deadlock

**Day 7****➤ JDBC**

- Understanding the JDBC basics
- Connecting to a database
- Working with MVC Design Pattern
- Database operations such as insert, update, delete
- Prepared statements
- Batch updates
- Stored procedures
- Working with ResultSet and RowSet classes

**➤ Logging, Packaging and Deployment**

- Importance and need of Logging
- Configuring and Using Logger
- Logging levels
- Packaging of application
- The .jar structure
- Using Eclipse to package project
- Jar on class path