

# Core Java 8 and Development Tools

## Lesson 00: Java SE 8

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### Document History

Date	Course Version No.	Software Version No.	Developer / SME	Change Record Remarks
12-Oct-2009	2.0	1.5	Anitha, Habib & Mahima	Revamped from J2SE 1.4 to J2SE 1.5
27-Oct-2009	3.0	1.5	CLS Team	Review
4 Jul 2011	4.0	1.5	Shrilata T	Changes in material made based on integration process
1 Mar 2015	5.0	1.8	Vinod Satpute	Changes made to include new features of Java version 6,7 and 8
25-May-2016	6.0	1.8	Tanmaya Acharya Uma Ponniamman	Changes made as per the ELT integrated TOC

## Course Goals and Non Goals

### ➤ Course Goals

- Implementing OOPs features in Java
- Developing Java Desktop Applications
- Use of Core JDK 1.8 API including JDBC 4.0
- Testing using Junit 4
- Logging Application using Log4J
- Implementing Multithreading

### ➤ Course Non Goals

- Developing GUI applications



## Pre-requisites

- Basic Programming Concepts
- OOPs
- DBMS/SQL
- XML

## Intended Audience

- Developers new to Java technology



### Day Wise Schedule

- Day 1
  - Lesson 1: Introduction to Java
  - Lesson 2: Eclipse 4.4 (Luna) as an IDE
  - Lesson 3: Language Fundamentals
  - Lesson 4: Classes and Objects
- Day 2
  - Lesson 5: Exploring Basic Java Class Libraries
  - Lesson 6: Inheritance and Polymorphism
- Day 3
  - Lesson 7: Abstract Classes and Interfaces
  - Lesson 8: Regular Expressions
- Day 4
  - Lesson 9 : Exception Handling
  - Lesson 10: Array
- Day 5
  - Lesson 11: Collection
  - Lesson 12: Generics



### Day Wise Schedule

#### ■ Day 6

- Lesson 13: File IO
- Lesson 14: Introduction to Junit 4

#### ■ Day 7

- Lesson 15: Property Files
- Lesson 16: Java Database Connectivity (JDBC 4.0)

#### ■ Day 8

- Lesson 17: Introduction to Layered Architecture
- Lesson 18: Advanced Testing

#### ■ Day 9

- Lesson 19: Logging with Log4J
- Lesson 20: Multithreading

#### ■ Day 10

- Lesson 21: Lambda Expressions
- Lesson 22: Stream API

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- Lesson 1: Introduction to Java
  - 1.1: Introduction to Java
  - 1.2: Features of Java
  - 1.3: Simple Program in Java
  - 1.4: Developing software in Java
- Lesson 2: Eclipse 4.4 (Luna) as an IDE
  - 2.1: Installation and Setting up Eclipse
  - 2.2: Introduction to Eclipse IDE
  - 2.3: Creating and Managing Java Projects
  - 2.4: Miscellaneous Options



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#### ■ Lesson 3: Language Fundamentals

- 3.1: Keywords
- 3.2: Primitive Data Types
- 3.3: Operators and Assignments
- 3.4: Variables and Literals
- 3.5: Flow Control: Java's Control Statements
- 3.6: Best Practices

#### ■ Lesson 4: Classes and Objects

- 4.1: Classes and Objects
- 4.2: Packages
- 4.3: Access Specifiers
- 4.4: Constructors - Default and Parameterized
- 4.5: this reference
- 4.6: Memory management in java
- 4.7: using static keyword
- 4.8: Enum
- 4.9: Best Practices

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#### ■ Lesson 5: Exploring Basic Java Class Libraries

- 5.1: The Object Class
- 5.2: Wrapper Classes
- 5.3: Type casting
- 5.4: Using Scanner Class
- 5.5: System Class
- 5.6: String Handling
- 5.7: Date and Time API
- 5.8: Best Practices

#### ■ Lesson 6: Inheritance and Polymorphism

- 6.1: Inheritance
- 6.2: Using super keyword
- 6.3: InstanceOf Operator
- 6.4: Method & Constructor overloading
- 6.5: Method overriding
- 6.6: @override annotation
- 6.7: Using final keyword

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  - 7.2: Interfaces
  - 7.3: default methods
  - 7.4: static methods on Interface
  - 7.5 : Interface rules
  - 7.6: Abstract class Vs Interface
  - 7.7: Runtime Polymorphism
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  - 8.2: Validating data
  - 8.3: Best Practices

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  - 9.2: Exception Types and Exception Hierarchy
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  - 10.4: Using Arrays class
  - 10.5: Best Practices
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  - 11.2: Collection Interfaces
  - 11.3: Iterating Collections
  - 11.4: Implementing Classes
  - 11.5: Comparable and Comparator
  - 11.6: Map implementation
  - 11.7: Legacy classes
  - 11.8: Best Practices
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  - 13.4: Character Stream Hierarchy
  - 13.5: Buffered Stream
  - 13.6: The File class
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  - 13.8: Object Stream
  - 13.9: Best Practices
- Lesson 14 : Introduction to JUnit 4
  - 14.1: Introduction
  - 14.2: JUnit
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  - 16.3: JDBC APIs
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  - 21.5: Method reference
- Lesson 22: Stream API
  - 22.1: Introduction to Stream API
  - 22.2: Working with Stream API
  - 22.3: Stream Operations

### References

- Books:

- Java, The Complete Reference; by Herbert Schildt
- Thinking in Java; by Bruce Eckel
- Beginning Java 8 Fundamentals by Kishori Sharan

- Websites:

- Java home page: <http://java.sun.com/>
- JDK 1.8 documentation: <http://docs.oracle.com/javase/8/docs/>
- Multithreading :  
<https://docs.oracle.com/javase/tutorial/essential/concurrency/index.html>



## Next Step Courses

- Servlets
- JSP



## Other Parallel Technology Areas

- C ++
- C#.Net
- Visual Basic.Net