

## Core Java 8 and Development Tools

### Lesson 00: Java SE 8

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## Course Goals and Non Goals

### ➤ Course Goals

- Implementing OOPs features in Java
- Developing Java Desktop Applications
- Use of Core JDK 1.8 API
- Testing using Junit 4

### ➤ Course Non Goals

- Developing GUI applications



### Pre-requisites

- Basic Programming Concepts
- OOPs

## 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
  - Lesson 5: Exploring Basic Java Class Libraries
- Day 2
  - Lesson 6: Inheritance and Polymorphism
  - Lesson 7: Abstract Classes and Interfaces
- Day 3
  - Lesson 8: Regular Expressions
  - Lesson 9 : Exception Handling
  - Lesson 10: Array



## Day Wise Schedule

- Day 4
  - Lesson 11: Collection
  - Lesson 12: File IO
- Day 5
  - Lesson 13: Introduction to JUnit 4 /Test NG
  - Lesson 14: Advanced Testing Concepts

## Table of Contents

- 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 using static keyword
- 4.7: 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: String Handling
- 5.6: Date and Time API
- 5.7: Best Practices

### ■ Lesson 6: Inheritance and Polymorphism

- 6.1: Inheritance
- 6.2: Using super keyword
- 6.3: Instance Of Operator
- 6.4: Method & Constructor overloading
- 6.5: Method overriding
- 6.6: @override annotation
- 6.7: Using final keyword
- 6.8 Best Practices

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- Lesson 7: Abstract Classes and Interfaces
  - 7.1: Abstract class
  - 7.2: Interfaces
  - 7.3: default methods
  - 7.4: static methods on Interface
  - 7.5 : Runtime Polymorphism
- Lesson 8: Regular Expressions
  - 8.1: Regular Expressions
  - 8.2: Validating data
  - 8.3: Best Practices

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- Lesson 9: Exception Handling
  - 9.1: Introduction
  - 9.2: Exception Types
  - 9.3: Exception Hierarchy
  - 9.4: Try-catch-finally
  - 9.5: Try-with-resources
  - 9.6: Multi catch blocks
  - 9.7: Throwing exceptions using throw
  - 9.8: Declaring exceptions using throws
  - 9.9: User defined Exceptions
  - 9.10: Best Practices

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- Lesson 10: Array
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  - 10.2: Multidimensional array
  - 10.3: Using varargs
  - 10.4: Using Arrays class
- Lesson 11: Collection
  - 11.1: Collections Framework
  - 11.2: Collection Interfaces
  - 11.3: Implementing Classes
  - 11.4 Iterating Collections
  - 11.5: Best Practices

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- Lesson 12: File IO
  - 12.1: Overview of I/O Streams
  - 12.2: Types of Streams
  - 12.3: The Byte-stream I/O hierarchy
  - 12.4: Character Stream Hierarchy
  - 12.5: Buffered Stream
  - 12.6: The File class
  - 12.7: The Path Interface
  - 12.8: Object Stream
  - 12.9: Best Practices
- Lesson 13 : Introduction to JUnit 4
  - 13.1: Introduction
  - 13.2: JUnit
  - 13.3: Installing and Running JUnit
  - 13.4: Testing with JUnit
  - 13.5: Testing Exceptions
  - 13.6: Test Fixtures
  - 13.7: Best Practices

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- Lesson 14: Advanced Testing Concepts
  - 14.1: Advanced Testing concepts
  - 14.2: Test Suites
  - 14.3: Parameterized Tests
  - 14.4: Mocking Concepts

### 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/>



## Next Step Courses

- Servlets
- JSP





## Other Parallel Technology Areas

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