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Java Basics

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Ver. Rel. No.	Release Date	Prepared. By	Reviewed By	Approved By	Remarks/Revision Details
V 1.0		Saravana Kumar			

Document History

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Course Title: Java Basics

1.Course Summary:

This course covers following topics.
- Java Background, Architecture, Releases, Features and Setup
- Java Fundamentals, Arrays, Strings, Methods and Wrapper Classes
- OOPs concepts, Enums, Packages, Exception Handling
- Collection Framework and Java IO Basics

2. Pre-Requisite

- Good knowledge on Programming
- Familiarity on Data Types, Conditional Statements and Loops
- Familiarity on Java IDE (IntelliJ / Eclipse)

3. Audience
- Java Developers

4. Hardware & Network Requirements
- Laptop / Desktop with 8 GB RAM and 50 GB Storage
- Open internet connection with good speed

5. Software Requirements
- Windows / Linux / Mac OS
- Java 17 and above
- Java IDE – Intellij IDEA or Eclipse latest version
- Git Client latest version
- Maven latest version

6.Learning Outcomes:
- Understand Java Features, Release Cycle and fundamentals
- How to work with Arrays, Strings, Methods Wrapper classes
- How to build application applying OOPs concepts and Exception Handling
- How to work with Collection Framework and when to use what collection
- Understand on Java IO and how to read/write data from different channels

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7.Course Content (day wise):

Day 1

Module 1: Intro to Java

• Intro about Programming Language Paradigms
• Why Java?
• Flavors of Java
• Java Designing Goal
• Role of Java Programming in industry
• Features of java Language
• Difference between JDK, JRE and JVM
• JVM Architecture
• Class Loader, Memory Management, Garbage Collection

Module 2: Environment Setup and First Java Program

• Verifying Java installation and IDE (IntelliJ IDEA / Eclipse)
• Language Syntax
• Write "Hello Wolrd" Java Program
• Java Source File Structure
• Compilation
• Executions
• Java Basics Recap

Module 3: Arrays and Strings

• Defining of an Array
• Initializing and accessing an Array
• Multi-Dimensional Array
• String overview
• Operation on String
• Mutable and immutable String
• Using Collection Bases loop for String
• Tokenizing a String
• Creating Strings using String Buffer and Builder

Module 4: Methods and Static Blocks

- Methods Overview
- Define a method
- Call a method
- Passing Arguments and Returning values
- Pass by Value
- Pass by Reference
- Static Blocks
- Static Methods

Module 5: Numbers and Wrapper Classes

- What is Wrapper Class
- Why Wrapper
- How to handle wrapper Classes
- Number class overview
- Byte, Short, Integer, Long, Float, Double, Character, Boolean
- Auto Boxing and Unboxing

Day 2

Module 5: Class, Object and OOPs Concepts

- Class overview
- Constructor
- this keyboard
- Object instantiation
- Accessing instance members
- Object class overview
- Instance Blocks
- OOPs Concepts Recap

Module 5: Enums and Packages

- Enums overview
- Creating and Accessing Enums
- Organizing Classes, Interfaces, Enums in Packages
- Package as Access Protection

Module 6: Exception Handling

- Exception vs Error
- Checked vs Unchecked Exception
- try..catch...finally, throw, throws
- try with resources
- Write custom exception

Day 3

Module 7: Collection Framework

• Java Collection Framework Overview
• Collection Data Structures - List, Set, Map, Queue
• Working with different Collection implementations and Algorithms
• List Overview
• ArrayList
• Vector
• LinkedList
• Iterator
• List Iterator
• Set Overivew
• HashSet
• Significance of equals() and hashCode() methods
• TreeSet
• Comparable vs Comparator interfaces
• Map Overview
• Hashtable
• HashMap
• LinkedHashMap
• TreeMap
• Collections Overview

Module 8: Intro to Java IO

• Intro to Java I/O
• Byte Stream vs Character Stream
• Input Stream, Output Stream
• Reader, Writer
• File class overview
• Reading and Writing data with Console
• Reading and Writing data with File

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8.Course Structure:

Activity	Indicative Number of Hours
Pre-Read Hours	8
Teaching Hours	12
Hands on Sessions Hours	12
Assignments & Tutorial Hours	8
Mock Project Hours	-

9.Course Structure:

Method of Assessment	Yes/No	Weightage
Pre-Assessment	Yes	
Mid-Assessment	No	
Post-Assessment	Yes	
Project Work	Yes (Assignments)	

10.Course Resources:

11.Recommended Reading Links:

12.Course Owner (s):

Employee Name	Employee Mail ID	Business Unit