

Core Java Certification Course

Course Duration : 60 Days

Topics & Details

Introduction to Core Java:

Lesson 1: Introduction to Java

- ★ What is Java?
 - History of Java
 - Features of Java
 - JVM, JRE, and JDK
- ★ Setting Up the Environment
 - Installing JDK
 - Setting up an IDE (Eclipse, IntelliJ IDEA, or NetBeans)
 - Writing and running the first Java program

★ Lesson 2: Java Basics

- Basic Syntax
- Structure of a Java program
- Main method
- ★ Data Types and Variables
 - Primitive data types
 - Declaring and initializing variables
 - Type casting and type conversion
- ★ Operators
 - Arithmetic operators
 - Relational operators
 - Logical operators



- Assignment operators

Lesson 3: Control Flow Statements

★ Conditional Statements

- If, else, and else-if
- Switch case

★ Loops

- For loop
- While loop
- Do-while loop
- Nested loops

★ Branching Statements

- Break
- Continue
- Return

Lesson 4: Arrays and Strings

★ Arrays

- Declaring and initializing arrays
- Accessing array elements
- Multidimensional arrays

★ Strings

- String class
- String methods
- StringBuffer and StringBuilder

Lesson 5: Object-Oriented Programming (OOP)

★ Introduction to OOP



- Principles of OOP: Encapsulation, Inheritance, Polymorphism, and Abstraction

★ Classes and Objects

- Creating classes and objects
- Constructors
- `this` keyword

★ Methods

- Method declaration and invocation
- Method overloading
- Recursion

Lesson 6: Inheritance

★ Inheritance Basics

- Superclass and subclass
- `extends` keyword

★ Method Overriding

- Overriding methods in subclasses
- `super` keyword

★ Types of Inheritance

- Single inheritance
- Multilevel inheritance
- Hierarchical inheritance

Lesson 7: Polymorphism

★ Compile-time Polymorphism

- Method overloading

★ Runtime Polymorphism

- Method overriding
- Dynamic method dispatch



★ Abstract Classes and Interfaces

- Abstract classes
- Interfaces
- Implementing interfaces

Lesson 8: Encapsulation and Access Modifiers

★ Encapsulation

- Data hiding
- Getter and setter methods

★ Access Modifiers

- Private, default, protected, and public

Lesson 9: Exception Handling

★ Basics of Exception Handling

- Types of exceptions: checked and unchecked
- `try`, `catch`, `finally` blocks

★ Throwing Exceptions

- `throw` and `throws` keyword
- Creating custom exceptions

Lesson 10: Java Collections Framework

★ Introduction to Collections

- Collection interfaces: List, Set, Map
- Collection classes: ArrayList, LinkedList, HashSet, TreeSet, HashMap, TreeMap

★ Iterating Collections

- Iterator and ListIterator
- Enhanced for loop

Lesson 11: File I/O

★ File Handling



- Reading and writing files using `FileReader` and `FileWriter`
- Buffered I/O using `BufferedReader` and `BufferedWriter`

★ **Serialization**

- Serializable interface
- Serializing and deserializing objects

Lesson 12: Multithreading

★ **Introduction to Multithreading**

- Creating threads by extending `Thread` class
- Creating threads by implementing `Runnable` interface

★ **Thread Synchronization**

- Synchronized methods and blocks
- Inter-thread communication

Lesson 13: Networking

★ **Basics of Networking**

- Sockets and ports
- URL class

★ **Client-Server Programming**

- Creating a simple client-server application

Lesson 14: Java 8 Features

★ **Lambda Expressions**

- Syntax and examples
- Functional interfaces

★ **Stream API**

- Working with streams
- Filtering, mapping, and reducing

★ **Optional Class**

