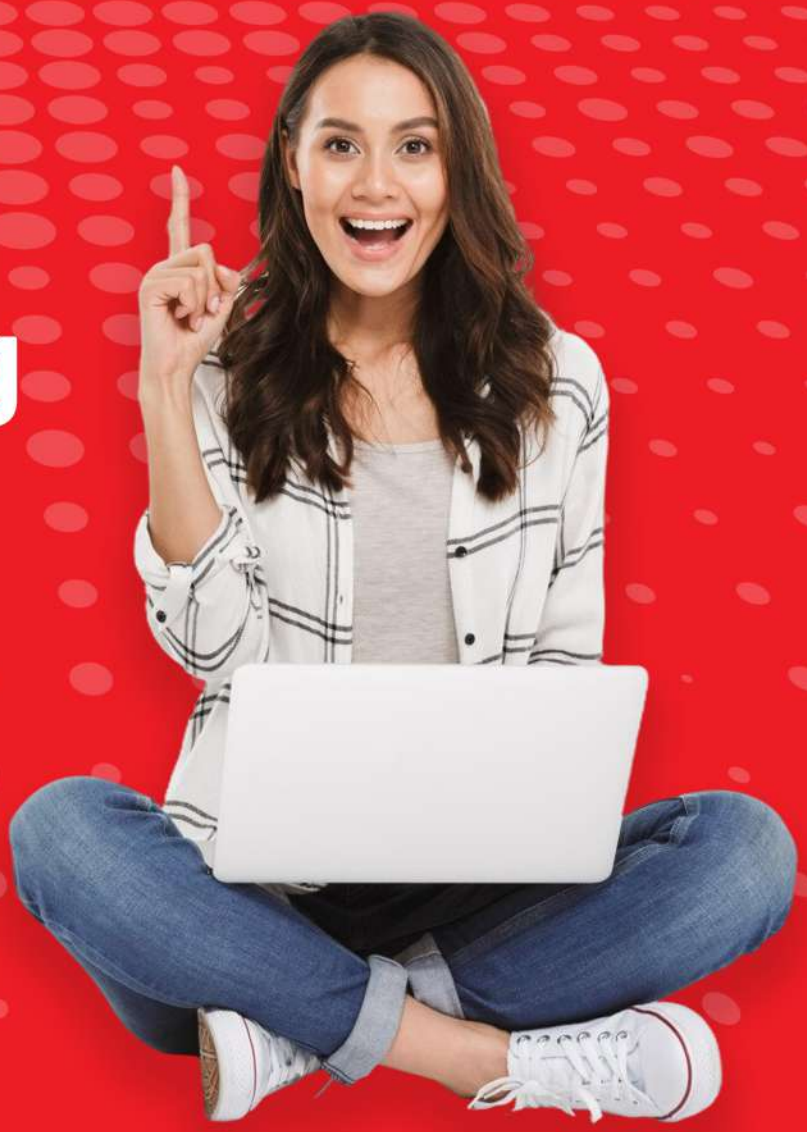
Core Java Certification

Zetlan Technologies

e-Learning Course



Transform your Career and Upgrade your Skills with Core Java!!

Core Java

Zetlan Technologies

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COURSE MODULES

Introduction to Java

1.1 Overview of Java Programming Language
- History and Evolution
- Features of Java
- Java Virtual Machine (JVM)

1.2 Setting up Java Development Environment
- Installing Java Development Kit (JDK)
- Config Integrated Development Environment (IDE)

Java Development Environment

- Installation of Java Development Kit (JDK).
- Setting up Integrated Development Environments (IDEs) like Eclipse or IntelliJ IDEA.
- Post-install configuration
- Compiling and executing
- Variables and arrays
- Create packaged classes
- Writing a simple program
- Data types
- Using Eclipse
- Eclipse shortcuts

Object-Oriented Programming (OOP) Concepts

4.1 Introduction to OOP
- Objects and Classes
- Inheritance, Polymorphism, Encapsulation, and Abstraction
- New keyword
- Reference variables
- Member methods of a class
- Constructors
- Finalize method
- Overloading member methods
- Overloading contractors

Java Basics

2.1 Structure of a Java Program
- Main method
- Statements and expressions

2.2 Variables and Data Types
- Primitive data types (int, float, char, boolean)
- Declaring and initializing variables

2.3 Operators and Expressions
- Arithmetic, relational, and logical operators
- Operator precedence

Control Flow Statements

3.1 Conditional Statements
- if, else if, else statements
- Switch-case statements

3.2 Looping Statements
- for while, do-while loops
- Enhanced for loop

- Passing and returning objects with methods
- Access control
- Static methods
- Static variables
- Static block
- Using final keyword
- Unit testing using Junit-5

4.2 Constructors and Destructors

- Default and parameterized constructors
- Garbage collection

4.3 Inheritance

- Basics of inheritance
- Members accessibility in inheritance
- Using super keyword
- Multilevel inheritance
- The sequence of execution of constructors
- Method overriding
- Dynamic method dispatch
- Abstract classes
- Preventing overriding
- Preventing inheritance

Interfaces

- Purpose of interface
- Defining an interface
- Implementing interfaces
- Interface reference variables
- Interface with variables
- Extending interfaces

Collections Framework

7.1 Overview of Collections

- List, Set, Map
- ArrayList, LinkedList, HashSet, HashMap

7.2 Iterators and Enumerations

- Traversing collections
- Understanding iterators

Predefined Libraries

- Using String class
- Using java.lang package
- Working with Data & Time
- Utility framework
- Collection framework
- I/O framework

Exception Handling

5.1 Understanding Exceptions

- Types of exceptions
- Using try and catch keywords
- Multiple catches
- Nesting of try blocks
- Using throw keyword
- Using throws keyword
- Finally block
- Some predefined exceptions and their usage
- User defined exceptions
- Exception hierarchy

5.2 Try-Catch Blocks

- Handling exceptions
- Throwing exceptions

File Handling

6.1 Reading and Writing to Files

- File I/O basics
- Working with FileReader and FileWriter

Multithreading

8.1 Introduction to Threads

- Basics of threads
- Java threaded model
- Defining threads using Runnable interface
- Defining threads using Thread superclass
- Multiple threads
- Thread Priority values
- Thread Synchronizatn using synchronized mthds
- Thread Synchronization usg synchronized blocks

8.2 Thread Safety and Deadlock

- Avoiding common multithreading pitfalls

Introduction to Java API

9.1 Working with Java Standard Libraries

- Utilizing predefined classes and methods

Applets and Swing

- Basics of GUI programming with AWT & Swing.
- Designing & implementing graphical interfaces.

Networking

- Basics of networking in Java.
- Socket programming.

Basic Design Patterns

10.1 Understanding Common Design Patterns

- Singleton, Factory, Observer

Introduction to JDBC

13.1 Connecting to Databases

- Executing SQL queries

Introduction to JavaFX

- Basics of JavaFX for modern UI development

Unit Testing

- Introduction to JUnit for testing Java applications.

Introduction to Maven and Ant

- Overview of building automation tools

Basic Design Patterns

- Understanding common design patterns in Java.

Unit Testing with JUnit

11.1 Introduction to JUnit

- Writing and executing test cases

Basic GUI Programming (Optional)

12.1 Introduction to AWT and Swing

- Creating simple graphical interfaces