

ZYTRIX TRAINING

Build your skills for Brighter Future

Core Java Programming Syllabus

Java Standard Edition Training

Module 1: Introduction to Java

Overview of Java programming language

History and features of Java

Installing Java Development Kit (JDK) and setting up the development environment

Writing and running a simple Java program

Module 2: Basics of Java Programming

Understanding Java syntax and structure

Data types, variables, and operators

Control flow statements (if, else, switch, loops)

Using comments and documentation in Java code

Module 3: Object-Oriented Programming (OOP) Principles

Introduction to object-oriented programming (OOP) concepts

Classes and objects

Constructors and methods

Encapsulation, inheritance, and polymorphism

Access modifiers (public, private, protected)

Module 4: Packages and Interfaces

Creating and using packages in Java

Importing classes and packages

Defining and implementing interfaces

Differences between classes and interfaces

Module 5: Exception Handling

Understanding exceptions and errors in Java

Using try-catch blocks for exception handling

Handling checked and unchecked exceptions

Throwing and propagating exceptions

Module 6: Arrays and Strings

Declaring and initializing arrays

Multi-dimensional arrays

String manipulation (concatenation, substring, length, etc.)

String methods and the StringBuilder class

Module 7: Java I/O Operations

File handling in Java (reading and writing files)

Streams and byte-oriented vs. character-oriented streams

Serialization and deserialization of objects

Working with standard I/O (System.in, System.out, System.err)

Module 8: Collections Framework

Overview of the Java Collections Framework (JCF)

ArrayList, LinkedList, HashSet, TreeSet, HashMap, TreeMap, etc.

Iterating over collections using iterators and enhanced for loops

Sorting and searching in collections

Module 9: Generics

Understanding generics and type safety

Writing generic classes and methods

Wildcards in generics (? extends, ? super)

Bounded type parameters

Module 10: Multithreading and Concurrency

Introduction to multithreading in Java

Creating and running threads

Synchronization and thread safety

Thread pools and concurrency utilities (Executor framework)

Module 11: Java Database Connectivity (JDBC)

Introduction to JDBC and database connectivity

Establishing database connections

Performing CRUD operations (Create, Read, Update, Delete)

Handling transactions and executing queries

Module 12: Java Standard Library

Exploring commonly used classes and packages in the Java Standard Library (java.lang, java.util, etc.)

Working with dates and times (java.time package)

Regular expressions (java.util.regex package)

Internationalization and localization (java.util.Locale, java.text package)

Module 13: Introduction to GUI Programming with Swing

Overview of GUI programming in Java

Introduction to Swing components (JFrame, JPanel, JButton, etc.)

Event handling and listeners

Creating simple graphical user interfaces (GUIs)

Module 14: Project Work

Students work on a real-world project using Java, incorporating concepts learned throughout the course

Module 15: Best Practices and Coding Standards

Writing clean, readable, and maintainable code

Java naming conventions and coding standards

Documentation and comments