Java 0 to pro| Cohort - 1

Cohort starting from **1st April 2024**

Curriculum

Topics

1. **Overview of Java**

   1. Introduction to Java
   2. The Complete History of Java Programming Language
   3. C++ V/S Java
   4. How to Download and Install Java for 64 bit machine?
   5. Setting up the environment in Java
   6. How to Download and Install Eclipse on Windows?
   7. JDK in Java
   8. How JVM Works - JVM Architecture?
   9. Differences between JDK, JRE and JVM
   10. Just In Time Compiler
   11. Difference between Byte Code and Machine Code
   12. How is Java platform independent?

2. **Basics of Java**

   1. Java Basic Syntax
   2. Java Hello World Program
   3. Java Data Types
   4. Primitive data type vs. Object data type in Java with Examples
   5. Java Identifiers
   6. Operators in Java
   7. Java Variables
   8. Scope of Variables In Java
   9. Wrapper Classes in Java

3. **Input/Output in Java**

   1. How to Take Input From User in Java?

2. Scanner Class in Java

3. Java.io.BufferedReader Class in Java

4. Difference Between Scanner and BufferedReader Class in Java

5. Ways to read input from console in Java

6. System.out.println in Java

7. Difference between print() and println() in Java

8. Formatted Output in Java using printf()

9. Fast I/O in Java in Competitive Programming

4. **Flow Control in Java**

1. Decision Making in Java (if, if-else, switch, break, continue, jump)

2. Java if statement with Examples

3. Java if-else

4. Java if-else-if ladder with Examples

5. Loops in Java

6. For loop in Java

7. Java while loop with Example

8. Java do-while loop with Examples

9. For-each loop in Java

10. Continue and break Statement in Java

11. return keyword in Java

5. **Java Operators**

1. Java Arithmetic Operators with Examples

2. Java Unary Operator with Examples

3. Java Assignment Operators with Examples

4. Java Relational Operators with Examples

5. Java Logical Operators with Examples

6. Java Ternary Operator with Examples

7. Bitwise Operators in Java

6. **Strings in Java**

1. Strings in Java

2. Java.lang.String class in Java | Set 2

3. Why Java Strings are Immutable?
4. StringBuffer class in Java
5. StringBuilder Class in Java with Examples
6. String vs StringBuilder vs StringBuffer in Java
7. StringTokenizer Class in Java
8. StringTokenizer Methods in Java with Examples | Set 2
9. StringJoiner Class in Java

7. Arrays in Java

1. Arrays in Java
2. Arrays class in Java
3. Multidimensional Arrays in Java
4. Different Ways To Declare And Initialize 2-D Array in Java
5. Jagged Array in Java
6. Final Arrays in Java
7. Reflection Array Class in Java
8. util.Arrays vs reflect.Array in Java with Examples

8. OOPS in Java

1. Object Oriented Programming (OOPs) Concept in Java
2. Why Java is not a purely Object-Oriented Language?
3. Classes and Objects in Java
4. Naming Conventions in Java
5. Java Methods
6. Access Modifiers in Java
7. Java Constructors
8. Four Main Object Oriented Programming Concepts of Java
9. Inheritance in Java
10. Abstraction in Java
11. Encapsulation in Java
12. Polymorphism in Java
13. Interfaces in Java
14. 'this' reference in Java

9. Inheritance in Java

1. Inheritance and Constructors in Java
2. Java and Multiple Inheritance
3. Interfaces and Inheritance in Java
4. Association, Composition and Aggregation in Java
5. Comparison of Inheritance in C++ and Java

10. Abstraction in Java

1. abstract keyword in java
2. Abstract Class in Java
3. Difference between Abstract Class and Interface in Java
4. Control Abstraction in Java with Examples
5. Difference Between Data Hiding and Abstraction in Java

11. Encapsulation in Java

1. Difference between Abstraction and Encapsulation in Java with Examples

12. Polymorphism in Java

1. Difference between Inheritance and Polymorphism
2. Dynamic Method Dispatch or Runtime Polymorphism in Java
3. Difference between Compile-time and Run-time Polymorphism in Java

13. Constructors in Java

1. Copy Constructor in Java
2. Constructor Overloading in Java
3. Constructor Chaining In Java with Examples
4. Private Constructors and Singleton Classes in Java

14. Methods in Java

1. Static methods vs Instance methods in Java
2. Abstract Method in Java with Examples
3. Overriding in Java
4. Method Overloading in Java

5. Difference Between Method Overloading and Method Overriding in Java

15. Interfaces in Java

1. Differences between Interface and Class in Java
2. Functional Interfaces in Java
3. Nested Interface in Java
4. Marker interface in Java
5. Comparator Interface in Java with Examples

16. Classes of Java

1. Understanding Classes and Objects in Java
2. Singleton Method Design Pattern in Java
3. Object Class in Java
4. Inner Class in Java
5. Throwable Class in Java with Examples

17. Packages in Java

1. Packages In Java
2. How to Create a Package in Java?
3. Java.util Package in Java
4. Java.lang package in Java
5. Java.io Package in Java

18. Multithreading in Java

1. Multithreading in Java
2. Lifecycle and States of a Thread in Java
3. Java Thread Priority in Multithreading
4. Main thread in Java
5. Java.lang.Thread Class in Java
6. Runnable interface in Java
7. Naming a thread and fetching name of current thread in Java
8. What does start() function do in multithreading in Java?
9. Difference between Thread.start() and Thread.run() in Java
10. Thread.sleep() Method in Java With Examples

19. Synchronization in Java

1. Synchronization in Java
2. Importance of Thread Synchronization in Java
3. Method and Block Synchronization in Java
4. Lock framework vs Thread synchronization in Java
5. Difference Between Atomic, Volatile and Synchronized in Java
6. Deadlock in Java Multithreading
7. Deadlock Prevention And Avoidance
8. Difference Between Lock and Monitor in Java Concurrency
9. Reentrant Lock in Java

20. File Handling in Java

1. Java.io.File Class in Java
2. Java Program to Create a New File
3. Different ways of Reading a text file in Java
4. Java Program to Write into a File
5. Delete a File Using Java
6. File Permissions in Java
7. FileWriter Class in Java
8. Java.io.FileDescriptor in Java