



GeeksforGeeks

# Master Java Programming

Complete Beginner to Advanced



Detailed  
Course Syllabus

## JAVA BASICS

- Background Part 1 (IO Devices, CPU and Memory)
- Background Part 2 (Computer Organization)
- Why Do We Need Programming Languages
- Java Introduction (Features, Applications and Working of JVM, etc)
- Writing First Program in Java
- Practice Problems

## VARIABLES AND DATA TYPES

- Variables in Java
- Non Primitive Types
- Wrapper Classes
- Autoboxing and Unboxing
- Swap two Variables
- Type Conversion in Java
- Practice Problems

## INPUT AND OUTPUT IN JAVA

- Output in Java (print() and println())
- Input in Java (Scanner, Reader & Writer)
- Escape Sequences in Java
- Practice Problems

## OPERATORS

- Operators in Java (Arithmetic, Logical and Bitwise Operators)
- Arithmetic Progression nth Term in Java
- Geometric Progression nth Term in Java
- Sum of Natural numbers
- Find Last Digit in Java
- Practice Problems

## FLOW CONTROL

- if, else and elif in Java
- Switch Statement
- Even-Odd in Java
- Largest of three in Java
- Leap Year in Java
- Calculator Program in Java
- Practice Problems

## LOOPS

- Loops In Java
- While Loops in Java
- For Loop In Java
- ForEach Loop in Java
- Table of A Number
- Break In Java
- Continue In Java
- Nested Loop in Java
- Square Pattern in Java
- Printing Triangle Pattern in Java
- Inverted Triangle in Java
- Pyramid Pattern in Java
- Count Digits
- Factorial in Java
- GCD in Java
- LCM in Java
- Fibonacci Numbers in Java
- Check for Prime in Java
- All Divisors in Java
- Optimizations of All Divisors and Prime
- Practice Problems

## FUNCTIONS

- Functions in Java (Introduction and Working)
- Applications of Functions
- Command Line Arguments
- Find First Digit in Java
- Prime Factorization
- Practice Problems

## ARRAY

- Introduction
- a[] vs []a
- Working of arrays and types
- Multidimensional Arrays in Java
- Find Average
- Check if Array is Sorted
- Count Distinct Elements
- Practice Problems



## STRING

- Strings in Java
- Escape Sequences and Raw Strings
- StringBuffer and StringBuilder
- StringBuffer and StringBuilder Methods
- Pattern Searching in Java
- Check For Palindrome In Java
- Reverse A String in Java
- Practice Problems

## CLASSES AND OBJECTS

- Classes in Java
- Objects in Java
- Constructors and Types
- This Reference
- Access Specifiers
- Static and Final
- Practice Problems

## JAVA OOPS

- Class and Objects in Java
- Encapsulation in Java
- Access Modifiers in Java
- This Reference
- Final Keyword
- Static Members
- Constructors
- Inheritance in Java
- Super keyword in Java
- More on Java Inheritances
- Polymorphism in Java
- Method Overriding in Java
- More on Method Overriding
- Abstraction in Java
- Abstract Classes in Java
- Interface in Java
- Interfaces vs Abstract Classes
- OOP Quiz | Part 1
- OOP Quiz | Part 2
- Practice Problems

## ADVANCED

- File I/O
- MultiThreading
- Exception Handling
- BigInteger
- Practice Problems

## COLLECTIONS OVERVIEW

- Introduction to Java Collections Framework
- Collections hierarchy
- Generics and much more
- Practice Problems

## JAVA LAMBDA EXPRESSIONS

- Introduction to Lambda Expressions and ways to use them
- Introduction to Method References and examples
- Syntax of Lambda Expressions and much more
- Practice Problems

## JAVA STREAMS

- Introduction to Streams in Java
- Various Applications of Streams
- The Stream hierarchy and methods and much more
- Practice Problems

## ARRAY LIST

- Introduction to List Interface
- Using List Iterator
- Introduction to ArrayLists and much more
- Practice Problems

## LINKED LIST

- Introduction and implementation of LinkedList in Java
- Problems with a video explanation and much more
- Practice Problems

## STACK

- Introduction to Stack
- Implementation
- Methods and much more
- Practice Problems

## QUEUE

- Introduction to Queue Interface
- Implementation and usage
- Methods and much more
- Practice Problems

## DEQUE

- Introduction to Deque
- Implementation and usage
- ArrayDeque and much more
- Practice Problems

## PRIORITY QUEUE

- Introduction to PriorityQueue
- Implementation and usage
- Methods and much more
- Practice Problems

## HASHSET AND LINKEDHASHSET

- Introduction to HashSet
- Introduction to LinkedHashSet
- Implementation and usage and much more
- Practice Problems

## TREESET

- Introduction to TreeSet
- Implementation and usage
- Methods and much more
- Practice Problems



## HASHMAP AND LINKEDHASHMAP

- Introduction to HashMap
- Introduction to LinkedHashMap
- Implementation and usage and much more
- Practice Problems

## TREEMAP

- Introduction to TreeMap
- Implementation and usage
- Methods and much more
- Practice Problems

## STRING

- Introduction to Strings
- Introduction to StringBuilder and StringBuffer
- Implementation and usage and much more
- Practice Problems

## COMPARATOR AND COMPARABLE

- Introduction to Comparable Interface
- Introduction to Comparator Interface
- Methods of Comparator Interface and Examples on it and much more
- Practice Problems

## ARRAYS CLASS

- Introduction to Arrays and the Arrays Class
- Implementation and usage
- Traversal and much more
- Practice Problems

## COLLECTIONS CLASS

- Introduction to Collections Class
- Methods like fill(), reverse(), binarySearch(), max(), min(), frequency() and much more
- Practice Problems

## **SORTING**

- Introduction to sorting in Java, Arrays.sort(), Collections.sort() and much more
- Practice Problems