

# Java Foundation



Detailed  
Course Syllabus

## 1. Java Basics

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

## 2. Variables and Data Types

- a. Variables in Java
- b. Non Primitive Types
- c. Wrapper Classes
- d. Autoboxing and Unboxing
- e. Swap two Variables
- f. Type Conversion in Java

## 3. Input and Output in Java

- a. Output in Java (print() and println())
- b. Input in Java (Scanner, Reader & Writer)
- c. Escape Sequences in Java

## 4. Operators

- a. Operators in Java (Arithmetic, Logical and Bitwise Operators)
- b. Arithmetic Progression nth Term in Java
- c. Geometric Progression nth Term in Java
- d. Sum of Natural numbers
- e. Find Last Digit in Java

## 5. Flow Control

- a. if, else and elif in Java
- b. Switch Statement
- c. Even-Odd in Java
- d. Largest of three in Java
- e. Leap Year in Java
- f. Calculator Program in Java

## 6. Loops

- a. Loops In Java
- b. While Loops in Java
- c. For Loop In Java
- d. ForEach Loop in Java
- e. Table of A Number
- f. Break In Java
- g. Continue In Java
- h. Nested Loop in Java
- i. Square Pattern in Java
- j. Printing Triangle Pattern in Java
- k. Inverted Triangle in Java
- l. Pyramid Pattern in Java
- m. Count Digits
- n. Factorial in Java
- o. GCD in Java
- p. LCM in Java
- q. Fibonacci Numbers in Java
- r. Check for Prime in Java
- s. All Divisors in Java
- t. Optimizations of All Divisors and Prime

## 7. Functions

- a. Functions in Java (Introduction and Working)
- b. Applications of Functions
- c. Command Line Arguments
- d. Find First Digit in Java
- e. Prime Factorization

## 8. Array

- a. Introduction
- b. a[] vs []a
- c. Working of arrays and types
- d. Multidimensional Arrays in Java
- e. Find Average
- f. Check if Array is Sorted
- g. Count Distinct Elements

## 9. String

- a. Strings in Java
- b. Escape Sequences and Raw Strings
- c. StringBuffer and StringBuilder
- d. StringBuffer and StringBuilder Methods
- e. Pattern Searching in Java
- f. Check For Palindrome In Java
- g. Reverse A String in Java

## 10. Classes And Objects

- a. Classes in Java
- b. Objects in Java
- c. Constructors and Types
- d. This Reference
- e. Access Specifiers
- f. Static and Final

## 11. ArrayList

- a. ArrayList Introduction
- b. ArrayList Methods
- c. ArrayList Working
- d. Get Smaller Elements
- e. Separate Even and Odd

## 12. Advanced

Overview of the following topics.

- File I/O
- MultiThreading
- Collections
- Stream
- Lambda Expressions
- Exception Handling
- BigInteger