

# Core Java Course Curriculum

## 1. Introduction to Java

- 1.1 Features of Java
- 1.2 The Java Virtual Machine
- 1.3 Parts of Java

## 2. First Step Towards Java Programming

- 2.1 API Document
- 2.2 Writing a Java Program
- 2.3 Importing classes
- 2.4 Formatting the output

## 3. Naming Conventions and Data Types

- 3.1 Naming Convention in Java
- 3.2 Data types in Java
  - 3.2.1 Integer data type
  - 3.2.2 Float data type
  - 3.2.3 Character Data type
  - 3.2.4 String data type
  - 3.2.5 Boolean Data Type
- 3.3 Literals
  - 3.3.1 Integer Literals
  - 3.3.2 Float Literals
  - 3.3.3 Character Literals
  - 3.3.4 String Literals
  - 3.3.5 Boolean Literals

## 4. Operators in Java

- 4.1 Operators
  - 4.1.1 Arithmetic Operator
  - 4.1.2 Unary Operator
  - 4.1.3 Increment Operator(++)
  - 4.1.4 Decrement Operator(--)
  - 4.1.5 Assignment Operator(=)
  - 4.1.6 Relational Operator
  - 4.1.7 Logical Operator
  - 4.1.8 Boolean Operator
  - 4.1.9 Bitwise Operator
  - 4.1.10 Ternary operator or Conditional Operator
  - 4.1.11 Instance of Operator
  - 4.1.12 new operator
  - 4.1.13 Cast operator
- 4.2 Priority of Operators

## 5. Control Statements in Java

- 5.1 if..else statement
- 5.2 do..while loop

- 5.3 while loop
- 5.4 for loop
  - 5.4.1 Nested for loop
  - 5.4.2 for-each loop
- 5.5 switch statement
- 5.6 break statement
- 5.7 continue statement
- 5.8 return statement

## 6. Input and Output

- 6.1 Accepting Input from the key board.
  - 6.1.1 Accepting a Single character from the keyboard
  - 6.1.2 Accepting a String from the key board
  - 6.1.3 Accepting an Integer Value from key board
  - 6.1.4 Accepting a Float value from key board
  - 6.1.5 Accepting a Double Value from key board
  - 6.1.6 Accepting other type of values
  - 6.1.7 Accepting Different types if input in a line
- 6.2 Reading input with java.util.Scanner class
- 6.3 Displaying Output with System.out.print();
- 6.4 Displaying Formatted output with String.format()

## 7. Arrays

- 7.1 Types of Arrays
  - 7.1.1 Single Dimensional Array
  - 7.1.2 Multi Dimensional Array
- 7.2 Three Dimensional Array
- 7.3 arrayname.length
- 7.4 Command Line Arguments

## 8. Strings

- 8.1 Creating Strings
- 8.2 String Class Methods
- 8.3 String Comparison
- 8.4 Immutability of Strings

## 9. String Buffer and String Builder

- 9.1 Creating StringBuffer Objects
- 9.2 StringBuffer class Method
- 9.3 StringBuilder Class
- 9.4 StringBuilder Class Method

## 10. Introduction to OOPs

- 10.1 Problems in Procedure Oriented Approach
- 10.2 Features of Object Oriented Programming system(OOPS)
  - 10.2.1 Class/object
  - 10.2.2 Encapsulation
  - 10.2.3 Abstraction
  - 10.2.4 Inheritance

## 10.2.5 Polymorphism

### 11. Classes and Objects

- 11.1 Object Creation
- 11.2 Initializing the instance Variables
- 11.3 Access specifiers
- 11.4 Constructors

### 12. Methods in Java

- 12.1 Method Header or Method Prototype
- 12.2 Method Body
- 12.3 Understanding Methods
- 12.4 Static Methods
- 12.5 Static Block
- 12.6 The keyword 'this'
- 12.7 Instance Methods
- 12.8 Passing primitive datatypes to Methods
- 12.9 Passing Objects to methods
- 12.10 Passing Arrays to methods
- 12.11 Recursion
- 12.12 Factory Methods

### 13. Relationship Between Objects

- 13.1 Relating Objects using References
- 13.2 Inner class
  - 13.2.1 Anonymous Inner class

### 14. Inheritance

- 14.1 Inheritance
- 14.2 The keyword 'super'
- 14.3 The protected specifier
- 14.4 Types of inheritance

### 15. Polymorphism

- 15.1 Polymorphism with variables
- 15.2 Polymorphism using Methods
  - 15.2.1 Dynamic Polymorphism
  - 15.2.2 Static Polymorphism
- 15.3 Polymorphism with Static Methods
- 15.4 Polymorphism with private Methods
- 15.5 Polymorphism with Final Methods
- 15.6 final class

### 16. Type Casting

- 16.1 Type of Datatypes
- 16.2 Casting primitive data types
- 16.3 Casting Referenced data types
  - 16.3.1 Generalization and Specifications
- 16.4 The object class
  - 16.4.1 Cloning the class objects

## **17. Abstract classes**

17.1 Abstract Method and Abstract Class

## **18. Interfaces**

18.1 Interface

18.2 Multiple inheritance using Interfaces

18.2.1 Abstract classes vs Interfaces

## **19. Packages**

19.1 Package

19.2 Different Types of Packages

19.2.1 Built-in packages

19.2.2 User-defined packages

19.3 The JAR files

19.4 Interfaces in a Package

19.5 Creating sub package in a Package

19.6 Access Specifiers in Java

19.7 Creating API document

## **20. Exception Handling**

20.1 Errors in Java program

20.2 Exceptions

20.2.1 Exception Handling

20.2.2 Handling Multiple Exceptions

20.3 throws clause

20.4 throw clause

20.5 Types of Exceptions

20.5.1 Built-in Exceptions

20.5.2 User-defined Exceptions

20.6 Re-throwing an Exception