

## Java Syllabus

### 1. Basics of Java

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Chapter 1 contains the basic introduction to the Java language such as

- √ What is Java?
- √ History and Features of Java
- √ C++ vs Java
- √ Hello Java Program
- √ Internal How to set the path?
- √ JDK, JRE, and JVM (Java Virtual Machine)
- √ JVM Memory Management
- √ Internal details of JVM
- √ Unicode System, Operators, Keywords, and Control Statements like if-else, switch, For loop, while loop, etc.

### 2. Class, Object, and Types of classes

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Chapter 2 deals with the most important and core concepts of Java. They are:

- √ Naming convention of Java
  - √ Classes, Objects, and Features. It explains how to declare a class, how to create an object in Java.
  - √ Object declaration and initialization
  - √ Life cycle of an object
  - √ Anonymous object in Java
- [Class and Objects in Java with Realtime Example](#)
- ### 3. Packages in Java
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Chapter 3 deals with Packages in Java. Under this chapter, we will learn the following topics.

- ✓ How to declare package in a company project
  - ✓ Package naming conventions
  - ✓ Sub packages
  - ✓ Types of packages such as user-defined packages, built-in packages
  - ✓ Importing packages in Java [Packages in Java with Example Programs](#)
- 4. Data types in Java**
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This chapter deals with the following topics in Java.

- ✓ Data types in Java
  - ✓ Primitive data types
  - ✓ Non-primitive data types
  - ✓ Memory allocation of primitive and non-primitive data types, etc. [Data types in Java](#)
- 5. Variables, Constants, and Literals**
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Chapter 5 discusses three topic variables, constants, and literals. You will learn the following subtopics in this chapter.

- ✓ Variable declaration & initialization
  - ✓ Naming convention
  - ✓ Types of variables such as local variables, instance variables, and static variables
  - ✓ Scope and memory allocation of variables. [Variables in Java | Types of Variables](#)
- 6. Methods in Java**
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- ✓ Methods in Java

- ✓ Use of method in Java
- ✓ Method declaration, method signature
- ✓ Types of methods in Java: predefined method, user-defined methods: instance method, static method
- ✓ Calling of method
- ✓ Java main method
- ✓ Return type in Java. [Java Methods | Declaration & Method Signature](#)

## **7. Constructor in Java**

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In this chapter, you will familiar with topics like:

- ✓ What is [Constructor in Java](#)?
- ✓ Types of constructors: Default and Parameterized constructors
- ✓ Java constructor overloading
- ✓ Constructor chaining in java
- ✓ Copy constructor in Java

## **8. Modifiers in Java**

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This chapter deals with topics like

- ✓ What is [Access modifier](#) and [Non-access modifier in Java](#)?
- ✓ Types of access modifiers like private, default, protected, and public
- ✓ Types of Non-access modifiers like abstract, final, native, static, Strictfp, synchronized modifier, transient, volatile.

## **9. Static Keyword**

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This chapter deals with the following important topics.

- ✓ What is Static keyword?
- ✓ [Static variable](#)

- ✓ Static method
- ✓ Static block, Instance block
- ✓ Static Nested Class in Java
- ✓ Difference between static variable and instance variable, static method and instance method, static block, and instance block.

## **10. Final Keyword**

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Under this chapter, you will learn three important topics:

- ✓ [Final keyword](#)
- ✓ Final variable
- ✓ Final method
- ✓ Final class.

## **11. Inner Class in Java**

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This chapter deals with the following topics. They are:

- ✓ What is [Inner class in Java](#)?, Properties of inner class, Instantiating inner class.
- ✓ Types of inner class in Java: Normal inner class, Method local inner class, Anonymous inner class, and Static nested class.

## **12. Super and this Keyword**

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This chapter can be partitioned into two sections: Super and This keyword. The first section discusses with

- ✓ [Super keyword](#)
- ✓ Calling of superclass instance variable
- ✓ Superclass constructor
- ✓ Superclass method.

The second section deals with

- ✓ This keyword
- ✓ Calling of current class constructor, and method.

### **13. OOPs concepts**

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In this chapter, you will learn the most important topic Object-oriented programming system (OOPs). In the [OOPs concept](#), you will learn class, object, encapsulation, inheritance, polymorphism, and abstraction. All topics are very important for interview purposes.

### **14. Encapsulation**

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This chapter deals with the following topics in Java.

- ✓ [Encapsulation in Java](#)
- ✓ How to achieve Encapsulation
- ✓ Data hiding
- ✓ Tightly encapsulated class
- ✓ Getter and setter method in Java
- ✓ Naming convention of getter and setter method

### **15. Inheritance**

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This chapter deals with

- ✓ [Inheritance in Java](#)
- ✓ Is-A Relationship
- ✓ Aggregation and Composition(HAS-A)
- ✓ Types of inheritance: Single level, Multilevel, Hierarchical, Multiple, and Hybrid inheritance.

### **16. Polymorphism**

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This chapter deals with

- ✓ [Polymorphism in Java](#),
- ✓ Types of polymorphism: Compile-time polymorphism and Run-time polymorphism
- ✓ Static and Dynamic Binding
- ✓ [Method overloading](#)
- ✓ [Method overriding](#)
- ✓ Rules of method overloading and method overriding, various example programs related to rules of overloading and overriding.
- ✓ Covariant Return type

## **17. Abstraction**

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In this chapter, you will familiarize with the most important topics in Java.

- ✓ [Abstraction in Java](#)
- ✓ Abstract class
- ✓ Abstract method
- ✓ [Interface in Java](#)
- ✓ Nested interface, rules, and example programs.

## **18. Garbage Collection**

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This chapter deals with garbage collection in Java.

## **19. Input Output Stream**

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In this chapter, you will learn topics like

- ✓ FileOutputStream, FileInputStream
- ✓ BufferedOutputStream, BufferedInputStream
- ✓ SequenceInputStream

- ✓ ByteArrayOutputStream, ByteArrayInputStream
- ✓ DataOutputStream, DataInputStream
- ✓ Java FilterOutputStream, Java FilterInputStream
- ✓ Java ObjectOutputStream, Java ObjectStreamField
- ✓ Console
- ✓ FilePermissionWriter, Reader, FileWriter, FileReader
- ✓ BufferedWriter, BufferedReader
- ✓ CharArrayReader, CharArrayWriter
- ✓ PrintStream, PrintWriter
- ✓ OutputStreamWriter, InputStreamReader
- ✓ PushbackInputStream, PushbackReader
- ✓ StringWriter, StringReader
- ✓ PipedWriter, PipedReader
- ✓ FilterWriter, FilterReader, File FileDescriptor, RandomAccessFile, and java.util.Scanner.

## **20. Collections Framework**

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This chapter is one of the most favorite chapters of the interviewer. It deals with the following important topics like

- ✓ What is [Collections](#) Framework?
- ✓ List, Set, SortedSet, Queue, Deque, Map, Iterator, ListIterator, and Enumeration.
- ✓ ArrayList, LinkedList, HashSet, LinkedHashSet, TreeSet, ArrayDeque, PriorityDeque, EnumSet, AbstractCollection, AbstractList, AbstractQueue, AbstractSet, and AbstractSequentialList.
- ✓ Map, Map Entry, SortedMap, and NavigableMap
- ✓ HashMap, LinkedHashMap, TreeMap, IdentityHashMap, WeakHashMap, and EnumMap.
- ✓ Comparator, RandomAccess interfaces as well as Observable class.

## 21. **Serialization**

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This chapter deals with Serialization, Deserialization, and Java transient keyword.

## 22. **Exception Handling in Java**

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This chapter is very important for any Java technical test or Java technical interview. In this chapter, you will familiar with

- ✓ [Exception Handling in Java](#)

- ✓ Try-catch block

- ✓ Multiple Catch Block

- ✓ Nested try block

- ✓ Finally block

- ✓ Throw Keyword

- ✓ Throws Keyword

- ✓ Throw vs Throws, Final vs Finally vs Finalize

- ✓ Exception Handling with Method Overriding Java Custom Exceptions

## 23. **Java Annotations**

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This chapter deals with Java annotations, Built-In Java annotations like @Override, @SuppressWarnings, @Deprecated, @Target, @Retention, @Inherited, @Documented, Java custom annotations, and types of annotations.

## 24. **Reflection in Java**

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- ✓ Reflection API



- ✓ NewInstance() & Determining the class object
- ✓ Javap tool, Creating javap tool
- ✓ Creating applet viewer
- ✓ Accessing private method from outside the class

## **25. Java Array**

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This chapter deals with

- ✓ Java Array
- ✓ Types of array: single dimensional array, multidimensional array, declaration, instantiation, and initialization of Java array
- ✓ Passing array to a method
- ✓ Anonymous array in Java
- ✓ Cloning an array in Java

## **26. String, String Buffer, String Builder**

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This is the most important chapter in the whole core java. It will deal with basically three topics such as

- ✓ String,
- ✓ Immutable String
- ✓ String Comparision, String concatenation
- ✓ Substring
- ✓ StringBuffer class
- ✓ StringBuilder class
- ✓ toString method
- ✓ StringTokenizer class

## **27. Java Thread**

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- √ Java multithreading
- √ Multithreading life cycle of a thread creating
- √ Thread scheduler
- √ Sleeping a thread, Start a thread twice
- √ Calling run() method
- √ Joining a thread
- √ Naming a thread
- √ Thread priority,
- √ Daemon thread
- √ Thread pool
- √ Thread group
- √ Shutdownhook
- √ Java Synchronization: synchronized method, synchronized block, static synchronization
- √ Deadlock
- √ Inter-thread Communication
- √ Interrupting Thread

## **28. JDBC**

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This chapter deals with

- √ JDBC Drivers
- √ Steps to connect to Database
- √ Connectivity with Oracle
- √ Connectivity with MySQL
- √ Connectivity with Access without DSN
- √ DriverManager
- √ Types of JDBC statements: Statement, Prepared statement, Callable statement

- √ Database Metadata, Resultset Metadata
- √ ResultSet, types of ResultSet,
- √ Storing image, Retrieving image
- √ Storing file, Retrieving file, Stored procedures, and functions
- √ Transaction Management
- √ Batch Processing
- √ JDBC New Features, Mini Project, and interview questions.

## **29. Agile**

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In this chapter, you will familiar with

- √ Agile model
- √ Advantages, and Disadvantages of Agile model
- √ Agile versus Waterfall method
- √ Important terminology: Scrum, Scrum Master, Flow of Agile Implementation, Sprint, and Burn down Charts.

## **30. Design Pattern**

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In design pattern chapter, you will learn

- √ Singleton Object
- √ Singleton design pattern with Serialization
- √ Factory Pattern
- √ Abstract Factory.

## **31. Database**

# Difference between Core Java and Advanced Java

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The main differences between Core Java and Advanced Java are as:

(a) **Syntax and programming complexity**

Core Java has a simpler syntax and is easier to learn compared to Advanced Java. Advanced Java requires a higher level of programming expertise and understanding of complex programming concepts.

(b) **Libraries and frameworks**

Core Java provides a basic set of libraries and tools, while Advanced Java provides a wide range of libraries, tools, and frameworks that simplify the development of complex applications.

(c) **Application and system requirements**

Core Java applications have lower system requirements compared to Advanced Java applications. Advanced Java applications require more advanced hardware and software configurations to run efficiently.

(d) **Skill level and job opportunities**

Core Java developers are more common and easier to find compared to Advanced Java developers. Advanced Java developers require more advanced skills and expertise and therefore have higher job opportunities and better salaries.