

Full Java Syllabus

1. Introduction to Java

- History and features of Java
- Java platform and editions
- JDK, JRE, and JVM
- Structure of a Java program
- Compiling and running Java programs

2. Java Basics

- Data types and variables
- Operators and expressions
- Control flow statements (if, switch, loops)
- Type casting
- Input and output using Scanner and System

3. Object-Oriented Programming in Java

- Classes and objects
- Constructors
- this keyword
- Method overloading
- Static members
- Access modifiers

4. Inheritance and Polymorphism

- Inheritance (single and multilevel)
- super keyword
- Method overriding

- Dynamic method dispatch
- Final keyword
- Abstract classes and methods
- Interfaces and multiple inheritance

5. Arrays and Strings

- Single and multi-dimensional arrays
- Array operations and methods
- String class and methods
- StringBuffer and StringBuilder
- String immutability

6. Exception Handling

- Types of exceptions
- try, catch, finally blocks
- throw and throws
- Custom exceptions

7. Packages and Access Modifiers

- Creating and using packages
- Built-in packages (java.util, java.io)
- Importing packages
- Access levels (private, default, protected, public)

8. Multithreading

- Thread class and Runnable interface
- Creating and running threads
- Thread lifecycle and methods
- Synchronization

- Inter-thread communication

9. File Handling and Streams

- FileInputStream and FileOutputStream
- Reader and Writer classes
- BufferedReader and BufferedWriter
- Serialization and Deserialization

10. Collections Framework

- Collection interface and List, Set, Map
- ArrayList, LinkedList, HashSet, TreeSet
- HashMap, TreeMap
- Iterator and ListIterator
- Comparable and Comparator interfaces

11. Java 8 and Beyond (Basics)

- Lambda expressions
- Functional interfaces
- Stream API (basics)
- Date and Time API (java.time)
- Optional class

12. GUI Programming (Optional)

- Introduction to AWT and Swing
- Frames and panels
- Event handling basics
- Layout managers