CORE JAVA-J2SE, JSE

1. Basics of Java

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

√ 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

3. Packages in Java

√ 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

4. Data types in Java

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.

5. Variables, Constants, and Literals

√ Variable declaration & initialization
√ Naming convention
√ Types of variables such as local variables, instance variables, and static variables

Scope and memory allocation of variables.

6. Methods in Java

√ Methods in Java
√ Use of method in Java
√ Method declaration, method signature
√ Types of methods in Java: predefined method, user-defined methods: instancemethod, static method
√ Calling of method

Variables in Java | Types of Variables
√ Java main method
√ Return type in
Java.Java Methods | Declaration & Method Signature

7. Constructor in Java

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

√ 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, Strict, synchronized modifier, transient, volatile.

Static Keyword

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

√ Final keyword
√ Final variable
√ Final method
√ Final class.

11. Inner Class in Java

√ 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

√ 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

14. Encapsulation

√ 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

√ Inheritance in Java

√ Is-A Relationship
√ Aggregation and Composition(HAS-A)
√ Types of inheritance: Single level, Multilevel, Hierarchical, Multiple, and Hybrid inheritance.

16. Polymorphism

√ 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

√ Abstraction in Java
√ Abstract class
√ Abstract method
√ Interface in Java

√ Nested interface, rules, and example programs.

Garbage Collection

Input Output Stream

√ FileOutputStream, FileInputStream
√ BufferedOutputStream, BufferedInputStream
√ SequenceInputStream
√ ByteArrayOutputStream, ByteArrayInputStream
√ DataOutputStream, DataInputStream
√ Java FilterOutputStream, Java FilterInputStream
√ Java ObjectStream, 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.

Collections Framework

√ 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, andEnumMap.
√ Comparator, RandomAccess interfaces as well as Observable class.

21. Serialization

Serialization, Deserialization, and Java transient keyword

Exception Handling in Java

√ 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

Java Annotations

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

Reflection in Java

√ Reflection API
√ NewInstance() & Determining the class object
√ Javap tool, Creating javap tool

√ Creating applet viewer
√ Accessing private method from outside the class

Java Array

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

JAVA. Lang pack

String, String Buffer, String Builder

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

Java Thread

√ 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
√ Shutdown hook
√ Java Synchronization: synchronized method, synchronized block, static synchronization

√ Deadlock
√ Inter-thread Communication
√ Interrupting Thread

JDBC

This chapter deals with
√ JDBC Drivers
√ Steps to connect to Database
√ Connectivity with Oracle
√ Connectivity with MySQL
√ Connectivity with Access without DSN
√ Driver Manager
√ 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

Design Pattern

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