**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.