

Core Java Contents

Duration: 25 Hours (1 Month)

➤ **Java Introduction**

- ❖ Java Versions
- ❖ Java Features
- ❖ Downloading and Installing Java
- ❖ Setup Java Environment
- ❖ Developing a Java Application at command prompt

➤ **Java Basics**

- ❖ Variables
- ❖ Data types – Primitive Types and Reference Types
- ❖ Casting – Implicit Casting and Explicit Casting
- ❖ Operators
- ❖ Reading input from keyboard using Scanner class
- ❖ Control Statements
 - if statement
 - switch statement
 - while loop
 - do..while loop,
 - for loop
 - break and continue
 - labeled break and continue

➤ **Arrays**

- ❖ Creating an Array
- ❖ One Dimensional Arrays
- ❖ Multi Dimensional Arrays

➤ **Java OOP**

- ❖ Classes and Objects
- ❖ Constructors
- ❖ static keyword
- ❖ Inheritance
- ❖ Polymorphism – Method overloading and Method Overriding
- ❖ super reference
- ❖ Constructors in Inheritance
- ❖ final keyword

➤ **Advanced Java OOP**

- ❖ Abstract Classes
- ❖ Interfaces
- ❖ Packages and Access Modifiers
- ❖ Method Overriding Rules – Access Modifiers
- ❖ Inner Classes
- ❖ Java Coding Standards

➤ **Introduction to Eclipse IDE**

- ❖ Introduction to IDEs
- ❖ Downloading and Installing eclipse IDE
- ❖ Developing a Java Application using Eclipse IDE

➤ **java.lang package**

- ❖ Object class
- ❖ String class
- ❖ StringBuffer and StringBuilder classes
- ❖ Methods of String class
- ❖ Math class, System class and Runtime class
- ❖ Wrapper classes

➤ **Exception Handling**

- ❖ Types of Errors
- ❖ Exception keywords – try, catch, finally, throw, throws
- ❖ Exception Hierarchy
- ❖ Exception Categories – checked and unchecked
- ❖ try with multiple catch blocks
- ❖ Exception Propagation
- ❖ User Defined exceptions
- ❖ Methods of Throwable class
- ❖ Exceptions in Overriding

➤ **Multithreading**

- ❖ Introduction to threads
- ❖ Thread Life Cycle –State Transition Diagram of a Thread
- ❖ Creating threads using Thread class and Runnable interface
- ❖ Methods of Thread class
- ❖ Thread Priorities
- ❖ join(), yield(), sleep() methods
- ❖ Synchronization
- ❖ Interthread communication

➤ **IO Package**

- ❖ Introduction to Streams,
- ❖ Types of Streams – Byte Streams and Character Streams
- ❖ InputStream sub classes
 - FileInputStream
 - BufferedInputStream
 - DataInputStream
- ❖ OutputStream sub classes
 - FileOutputStream
 - BufferedOutputStream,
 - DataOutputStream

- ❖ Reader subclass
 - FileReader
 - BufferedReader
- ❖ Writer sub classes
 - FileWriter
 - BufferedWriter
- ❖ Serialization – ObjectOutputStream and ObjectInputStream
- ❖ File Class – Creating Files and Folders

➤ **Java 5 version Features**

- ❖ Autoboxing
- ❖ Scanner class
- ❖ Enhanced for loop
- ❖ Generics
- ❖ Enumerations
- ❖ static imports
- ❖ Variable arguments
- ❖ Annotations

➤ **Java 6 Version Features**

- ❖ Console Class
- ❖ Including Javascript code in Java
- ❖ Load Jdbc Driver Class without using Class.forName()

➤ **Java 7 version Features**

- ❖ Underscore in numbers
- ❖ String as an expression in switch statement
- ❖ try with resource

➤ **Java 8 Version Features**

- ❖ Define methods in interfaces
- ❖ Lamda Expressions

- ❖ Stream API
- ❖ forEach() in Collections

➤ **Java 9 version Features**

- ❖ Modularity - jigsaw
- ❖ private methods in interfaces
- ❖ JShell
- ❖ try with resource enhancements
- ❖ Factory methods in Collections

➤ **Collections Framework**

- ❖ Introduction to Collections, Collections Hierarchy
- ❖ List – ArrayList, LinkedList classes
- ❖ Set – HashSet, TreeSet, LinkedHashSet classes
- ❖ Map – Hashtable, HashMap, TreeMap, LinkedHashMap classes
- ❖ Iterator, ListIterator interfaces
- ❖ Comparator interface

➤ **SQL (Oracle/MySQL)**

- ❖ Introduction to Database and SQL
- ❖ SQL Commands – DDL, DML, DQL, TCL
- ❖ DDL – CREATE, ALTER, DROP
- ❖ DML – INSERT, UPDATE, DELETE
- ❖ DQL – SELECT, TCL – COMMIT, ROLLBACK

➤ **JDBC**

- ❖ Introduction to JDBC, Types JDBC Drivers
- ❖ Steps to connect to Data base using JDBC
- ❖ Statement Interface, PreparedStatement interface