

Java Basic to Advanced

Duration: 40 Hours- 15 Days
Each Session Time: 1 & ½
Hour (90 Minutes)

DAY-WISE SCHEDULE & LEARNING ACTIVITIES

Day 01: Java Fundamentals

- **❖** What is Java?
- History of Java
- Java Virtual Machine (JVM)
- Java Development Kit (JDK)
- Setting up Java Environment
- Basic Structure of a Java Program
- Hello, World! Program
- Comments



Day 02:Variables, Data Types, Operators

Operators

Arithmetic, Relational, Logical, etc

Keywords and Identifiers

Data Types (Primitive, Reference)

Variables and Constants

Declaration, Initialization of Var

Operator Precedence, Associativity

Type Casting



Day 03: Control Flow Statements

- Conditional Statements
 - if, else-if, else
- Loops
 - for, while, do-while
- Nested Loops
- **❖** Break & Continue Statements
- Switch Statement



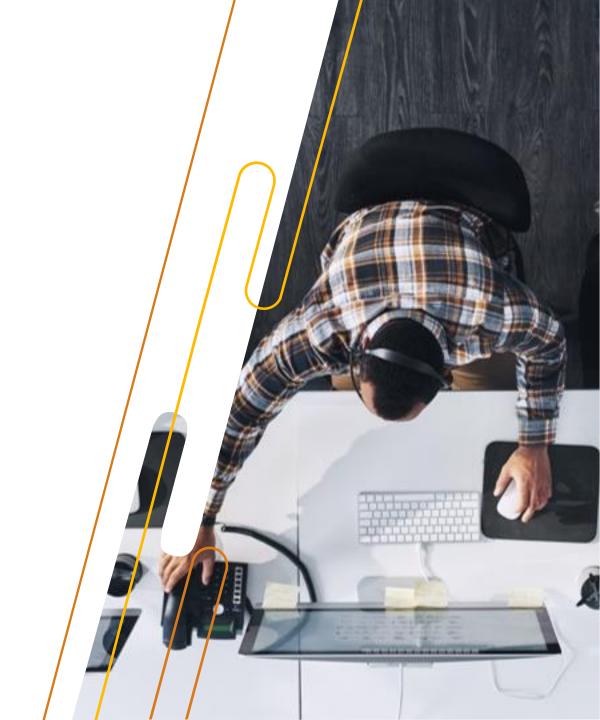
Day 04: Arrays

- One-Dimensional Arrays
- Declaration of Arrays
- Initialization of Arrays
- Accessing Arrays
- Array Operations
 - Sorting, Searching, etc.
- Multi-Dimensional Arrays



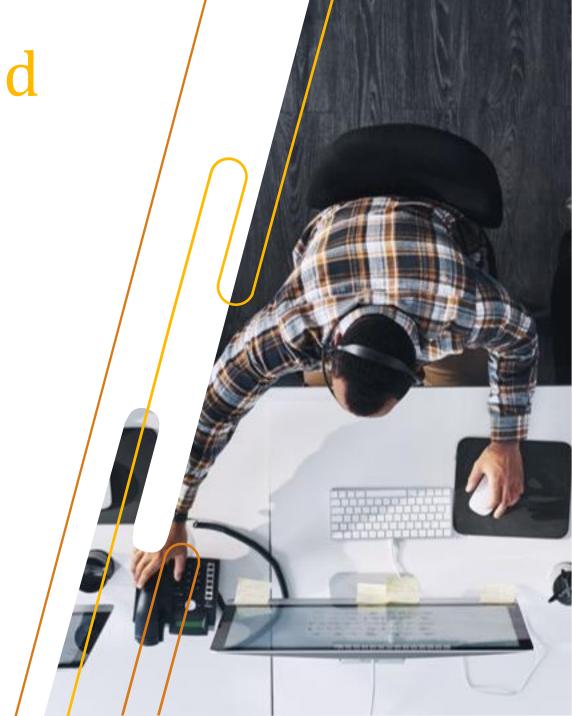
Day 05: Strings

- String Class
- String Manipulation Methods
 - length, charAt, concat, substring, etc.
- String Comparison
- String Formatting
- Regular Expressions



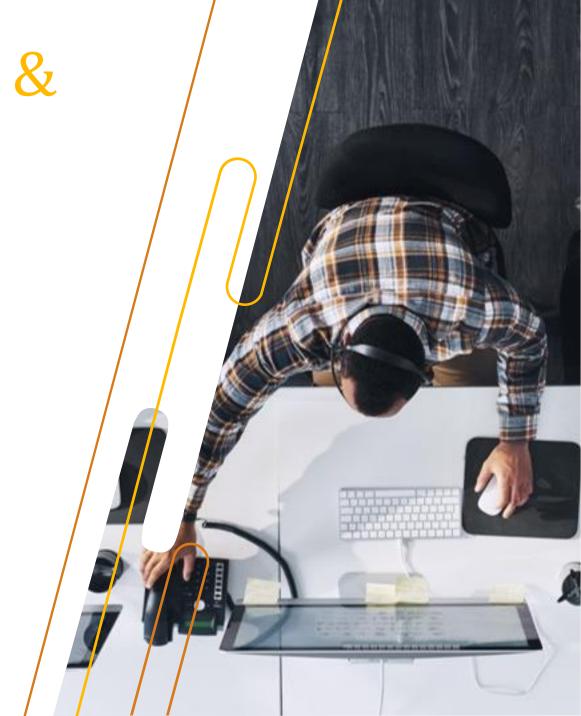
Day 06: Classes and Objects

- Classes and Objects
- Constructors
- Methods
- Encapsulation
- Inheritance
- Polymorphism
- Method Overloading
- Method Overriding



Day 07: Interfaces & Abstract Classes

- Interfaces
- **❖** Abstract
- Implementing Interfaces
- **❖** Abstract Methods
- Multiple Inheritance (using Interfaces)



Day 08: Packages

- Creating Packages
- Importing Packages
- Package Hierarchy
- **Access Modifiers**
 - public
 - private
 - protected



Day 09: Exception Handling

- Try-Catch-Blocks
- Throwing Exceptions
- Custom Exceptions



Day 10: File Handling

- File Input/Output Streams
- Reading Text Files
- Writing Text Files
- Reading Binary Files
- Writing Binary Files
- ❖ File I/O Exceptions



Day 11: Generics

- Generic Classes
- Generic Methods
- **❖** Type Bounds
- Wildcards



Day 12: Collections Framework

- ArrayList
- LinkedList
- HashSet
- TreeSet
- HashMap
- TreeMap
- Iterators and Collections



Day 13: Multithreading

- Thread Creation
- Thread Execution
- Thread Synchronization
- Inter-Thread Communication
- Concurrent Utilities
 - ConcurrentHashMap
 - CountDownLatch
 - Semaphore



Day 14: Networking

- Sockets
- Server-Client Communication
- TCP/IP Protocol
- UDP Protocol
- ***** HTTP Protocol



Day 15: JavaFX

- Introduction to JavaFX
- Basic GUI Components
- Event Handling
- Layout Managers
- Scene Graph
- **❖** FXML
- Animations
- Transitions

