



## CORE JAVA

### 1. Introduction

- a. introduction to java
- b. comparison of java and C++
- c. Basic of programming in Java

### 2. Basic Concepts

- a. Identifiers, Literals, Variables
- b. Data types, Operators
- c. Control Statements (selection, Looping)
- d. Jumping Statements (break, continue, return)
- e. Array in Java
- f. Scope of variables
- g. Command line arguments

### 3. Objects and Classes

- a. Simple class, fields, Access Modifiers
- b. **new** operator
- c. methods
- d. Overloading methods
- e. Constructors
- f. **this** keyword
- g. **static** keyword
- h. initialization block
- i. Garbage collection & finalizer
- j. Nested class, Enum types
- k. Wrapper class
- l. Narrowing & widening

### 4. Inheritance & interface

- a. Super and sub class
- b. Method overriding
- c. Polymorphism
- d. Super keyword
- e. Construct with inheritance
- f. Final keyword
- g. Abstract method & abstract class
- h. Dynamic binding, casting objects, instanceof operator
- i. **Interface**
- j. Interface vs abstract class
- k. Concrete class
- l. Multiple inheritance in java



## 5. Package

- a. Introduction to Packages
- b. Naming rules
- c. Access protection
- d. Type Import
- e. static Import
- f. Interfaces

## 6. Exception Handling

- a. Exception – Handling fundamental
- b. Exception & Errors
- c. Control flow in exception
- d. Checked and unchecked exception
- e. Use of try, catch, throw, throws, finally
- f. Creating your own exception sub classes

## 7. String class

- a. Introduction
- b. Constructors and methods
- c. StringBuffer class
- d. StringBuider class

## 8. Thread

- a. Understanding threads / need of multi-threading
- b. Thread model- Life cycle
- c. Thread class
- d. Runnable interface
- e. Thread priorities
- f. Synchronization
- g. Inter thread communication
- h. Deadlock in thread

## 9. Object class

## 10. Applet class

- a. Applet class basics / architecture
- b. Skeleton
- c. Applet display methods
- d. Embedded applet into web-page
- e. Graphics class
  - o Drawstring, drawline, drawrect, fillrect, clearrect, fillroundrect, drawoval
- f. Update, paint, repaint method
- g. Passing parameters to applets getparameter() method
- h. Animation with the applet
- i. **Small game**



## 11. Generics

- a. Simple generic example
- b. Generic class with multiple arguments
- c. Bounded generics
- d. Wildcard arguments
- e. Bounded wildcard
- f. Generic method
- g. Static generic method
- h. Erasure
- i. Generic with inheritance
- j. Bridge Methods
- k. Restrictions on generics
- l. Raw types

## 12. Explore util package

- a. Utility methods of the array
- b. Date & time
- c. Scanner class

## 13. I/O Programming in java

- a. File class
- b. Stream classes
- c. Reader/writer classes
- d. Random access files

## 14. GUI programming

- a. GUI Basics
- b. GUI components – AWT
- c. Layout manager in JAVA
- d. Adding menus to window
- e. Introduction to Swing
- f. Images in java

## 15. Event handling

- a. Event-driver programming
- b. The delegation model
- c. Event classes & listeners
- d. Adapter classes

## 16. Networking in Java



***Applications:***

1. TicTacTeo game
2. Notepad
3. Chat messenger
4. Phone Directory
5. Digital Clock
6. Animation with text
7. Animation with images