

# JAVA BY EXAMPLES

## PART I: JAVA BASIC

### SESSION 1: Introduction to Java

- Explain the structured programming paradigm
- Explain the object-oriented programming paradigm
- Explain the features of Java as a OOP language
- Describe the steps for downloading and installing Java Development Kit (JDK)

### Session 2 – Application Development in Java

- Explain the structure of a Java class
- List and explain steps to write a Java program
- Identify the benefits of NetBeans IDE
- Explain the steps to develop, compile, and execute Java program using NetBeans IDE

### Session 3 – Variables and Operators

- Explain variables and their purpose
- State the syntax of variable declaration
- Explain the rules and conventions for naming variables
- Explain data types
- Describe primitive and reference data types
- Describe escape sequence
- Describe format specifiers
- Identify and explain different type of operators
- Explain the concept of casting
- Explain implicit and explicit conversion

## Session 4 – Decision-Making Constructs

- Identify the need for decision- making statements
- List the different types of decision-making statements
- Explain the if statement
- Explain the various forms of if statement
- Explain the switch-case statement
- Explain the use of strings and enumeration in the switch-case statement
- Compare the if-else and switch- case statement
- Explain implicit and explicit conversion

## Session 5 – Looping Constructs

- List the different types of loops
- Explain the while statement and the associated rules
- Identify the purpose of the do-while statement
- State the need of for statement
- Describe nested loops
- Compare the different types of loops
- State the purpose of jump statements
- Describe break statement
- Describe continue statement

# PART II: JAVA OOP

## Session 6 – Classes and Objects

- Explain creation of classes in Java
- Explain the instantiation of objects in Java
- Explain the purpose of instance variables and instance methods
- Explain constructors in Java

- Explain object initializers

## Session 7 – Methods and Access Specifiers

- Describe methods
- Explain the process of creation and invocation of methods
- Explain passing and returning values from methods
- Explain variable argument methods
- Describe the use of Javadoc to lookup methods
- Describe access specifiers and the types of access specifiers
- Explain the use of access specifiers with methods
- Explain the concept of method overloading
- Explain the use of this keyword

## Session 9 – Modifiers

- Describe field and method modifiers
- Explain the different types of modifiers
- Explain the rules and best practices for using field modifiers
- Describe class variables
- Explain the creation of static variables and methods

## Session 10 – Inheritance and Polymorphism

- Describe inheritance
- Explain the types of inheritance
- Explain super class and subclass
- Explain the use of super keyword
- Explain method overriding
- Describe Polymorphism

- Differentiate type of reference and type of objects
- Explain static and dynamic binding
- Explain virtual method invocation
- Explain the use of abstract keyword