

**Tumkur University**  
**Skill Enhancement Course**  
**Junior Software Developer**

Credits: 2

Duration: 45 hrs

Session	Topics
1.	<b>Java Language</b> Introduction and History of java Features of java Difference between, c, c++ and Java Installation Steps.  <b>Practical Session.</b> Installing IDE.
2.	<b>Setting path</b> Setting path temporarily Setting path permanently Steps to Write, Compile and Run Java Program Comments  <b>Practical Session</b> Setting path temporarily Setting path permanently Write a simple program Compile and Run Commenting in a program
3.	<b>Keywords in Java Program</b> Character Sets Keywords Identifiers  <b>Practical Session.</b> Programs related to keywords Program related to identifiers
4.	<b>Data Types</b> Primitive Data Types User Defined Data Types  <b>Practical Session.</b> Programs related to data type
5.	<b>Variables</b> Variables declaration syntaxes Primitive Variables Reference Variables Constants  <b>Practical Session.</b> Program to demonstrate different Variables declaration syntaxes

	<p>Program to demonstrate Primitive Variables  Program to demonstrate Reference Variables  Program to demonstrate Constants.</p>
6.	<p><b>Literals</b>  Boolean Literals  Integer Literals  Floating Point Literals</p> <p><b>Practical Session.</b>  Program to demonstrate Boolean literals  Program to demonstrate Integer Literal  Program to demonstrate Floating point literal.</p>
7.	<p><b>Literals Contd.</b>  Character Literals  String Literals  null Literal</p> <p><b>Practical Session.</b>  Program to demonstrate Character literals  Program to demonstrate String Literal  Program to demonstrate null literal.</p>
8.	<p><b>Operators</b>  Arithmetic Operators  String Concatenation Operator  Increment / Decrement Operators</p> <p><b>Practical Session.</b>  Program to demonstrate Arithmetic Operators  Program to demonstrate String Concatenation Operator  Program to demonstrate Increment and decrement Operator</p>
9.	<p><b>Operators Contd.</b>  Assignment Operators  Type Casting  Relational Operators</p> <p><b>Practical Session.</b>  Program to demonstrate Assignment Operators  Program to demonstrate Type casting  Program to demonstrate Relational Operator.</p>
10.	<p><b>Operators Contd.</b>  Logical Operators  Bitwise Operators</p> <p><b>Practical Session.</b>  Program to demonstrate Logical Operators  Program to demonstrate Bitwise Operator</p>
11.	<p><b>Operators Contd.</b>  Conditional Operator  new Operator  instance of Operator  Control Statements</p>

	<p>Conditional Control Statements –switch</p> <p><b>Practical Session.</b>  Program to demonstrate Conditional Operators  Program to demonstrate new Operator  Program to demonstrate instance of Operator  Program to demonstrate if statement  Program to demonstrate switch statement</p>
12.	<p><b>Control Statements Contd.</b>  Looping Control Statements</p> <p><b>Practical Session.</b>  Program to demonstrate for loop  Program to demonstrate while loop  Program to demonstrate do-while loop</p>
13.	<p><b>Control Statements Contd.</b>  unconditional Control Statements</p> <p><b>Practical Session.</b>  Program to demonstrate break statement  Program to demonstrate continue statement</p>
14.	<p><b>Arrays</b>  Array Declaration and Construction.  Array Declaration, Construction and Initialization  Accessing Array elements.</p> <p><b>Practical Session.</b>  Program to declare Arrays  Program to construct arrays  Program to Initialize arrays  Program to access Array elements</p>
15.	<p><b>Arrays Contd.</b>  Single Dimensional Arrays  Enhanced for Statement  Command Line Arguments</p> <p><b>Practical Session.</b>  Program to demonstrate for each statement  Program to demonstrate single dimensional array.  Program to demonstrate command line arguments</p>
16.	<p><b>Arrays Contd.</b>  Why arrays are static in nature.  Two Dimensional Arrays</p> <p><b>Practical Session.</b>  Program to demonstrate static nature of array  Program to demonstrate 2D array</p>
17.	<p><b>Introduction to OOPS</b>  Programming Models  Difference between programming models</p>

	<p><b>OOPS Concepts</b>  Abstraction  Encapsulation  Inheritance  Polymorphism  Classes and Objects</p>
18.	<p><b>Variables</b>  Instance Variables  Static Variables  Local Variables</p> <p><b>Practical Session.</b>  Program to demonstrate instance variables  Program to demonstrate static variables  Program to demonstrate local variables</p>
19.	<p><b>Blocks</b>  Instance Initialization Blocks  Static Initialization Blocks  Local Blocks</p> <p><b>Practical Session.</b>  Program to demonstrate instance blocks  Program to demonstrate static blocks  Program to demonstrate local blocks</p>
20.	<p><b>Constructor.</b>  What is Constructor  Types of Constructor  Constructor Overloading</p> <p><b>Practical Session.</b>  Program to define Constructor  Program to demonstrate Types of Constructor  Program to demonstrate Constructor Overloading</p>
21.	<p><b>Constructors Contd.</b>  This keyword  Constructor Chaining.  Final variables and constructor</p> <p><b>Practical Session.</b>  Program to demonstrate this Keyword  Program to demonstrate Constructor Chaining  Program to demonstrate Final variable initialization by using constructor</p>
22.	<p><b>Methods</b>  Types of Method  Methods Return Type  Methods Parameters  Method Overloading</p> <p><b>Practical Session</b>  Program to define method  Program to demonstrate Types of Method.</p>

	<p>Program to demonstrate Method Parameters  Program to demonstrate Method Overloading</p>
23.	<p><b>Methods Contd</b>  Recursion  Call by Value/ Call by Reference  Var-Args</p> <p><b>Practical Session.</b>  Program to demonstrate Recursion  Program to demonstrate Call by value  Program to demonstrate Call by Reference  Program to demonstrate Var-args</p>
24.	<p><b>Inheritance</b>  What is Inheritance?  Simple Inheritance  Multiple Inheritance  Multilevel Inheritance  Hierarchical Inheritance  Hybrid Inheritance  Cyclic Inheritance</p> <p><b>Practical Session.</b>  Program to inherit properties of super class  Program to demonstrate Simple Inheritance  Program to demonstrate Multiple and cyclic Inheritance  Program to Demonstrate Multi level Inheritance  Program to Demonstrate Hierarchical Inheritance  Program to Demonstrate Hybrid Inheritance</p>
25.	<p><b>Inheritance Contd.</b>  Inheritance and Blocks  Inheritance and Constructors  super keyword</p> <p><b>Practical Session.</b>  Program to demonstrate Inheritance and blocks  Program to demonstrate Inheritance and Constructors  Program to demonstrate super keyword</p>
26.	<p><b>Access Modifiers</b>  Private scope  Default scope  Protected scope  Public scope</p>
27.	<p><b>Practical Session.</b>  Program to demonstrate private scope  Program to demonstrate default scope  Program to demonstrate protected scope  Program to demonstrate public scope</p>
28.	<p><b>Method Overriding.</b>  What is method overriding  Rules to overload methods</p>

29.	<b>Lab:28 Practical Session.</b> Program to demonstrate method overriding Program to demonstrate rules to overriding.
30.	<b>Polymorphism.</b> Dynamic Dispatch Dynamic Polymorphism Static Polymorphism
31.	<b>Lab:29 Practical Session.</b> Program to demonstrate dynamic dispatch Program to demonstrate Dynamic Polymorphism Program to demonstrate static Polymorphism.
32.	<b>Abstract Classes.</b> Abstract Classes and Abstract Methods
33.	<b>Practical Session.</b> Program to demonstrate abstract classes Program to demonstrate abstract methods
34.	<b>Interfaces</b> What is an Interface Members of Interface Accessing interface Types of interfaces Multiple Inheritance using Interface.
35.	<b>Lab:31 Practical Session.</b> Program to define interface Program to demonstrate members of interface Program to demonstrate types of interface Program to Program to demonstrate multiple inheritance using Interfaces
36.	<b>Interfaces Contd.</b> Static function in interface Default function in Interface Lambda Expression
37.	<b>Practical Session.</b> Program to demonstrate static function in interface Program to demonstrate Default function in Interface Program to demonstrate lambda expression
38.	<b>Inner Classes.</b> What is an Inner Class. Types of Inner Class. Instance Inner Class
39.	<b>Practical Session.</b> Program to define Inner classes Program to demonstrate Instance Inner Class. Program to demonstrate accessing of Instance Inner class Members
40.	<b>Inner Classes Contd.</b> Static Inner Class
41.	<b>Practical Session.</b> Program to demonstrate static Inner Class Program to demonstrate accessing of static Inner class Members

<b>42.</b>	<b>Inner Classes Contd.</b> Local Inner Class
<b>43.</b>	<b>Practical Session.</b> Program to demonstrate Local Inner Class Program to demonstrate accessing of Local Inner class Members
<b>44.</b>	<b>Inner Classes Contd.</b> Anonymous Inner Class
<b>45.</b>	<b>Practical Session.</b> Program to demonstrate uses of Anonymous inner class Program to demonstrate accessing of Anonymous Inner class Member.