

**KAKATIYA UNIVERSITY**  
**FACULTY OF SCIENCE**  
**B.Sc. (Computer Science)**  
**SEMESTER – V**  
**Programming in Java**

Theory	4 Hours/Week	4 Credit	Internal marks = 20
Practical	3 Hours/Week	1 Credit	External Marks = 80

**Unit - I**

Introduction: Java Essentials, JVM, Java Features, Creation and Execution of Programs, Data Types, Structure of Java Program, Type Casting, Conditional Statements, Loops, Classes, Objects, Class Declaration, Creating Objects.

**Unit - II**

Method Declaration and Invocation, Method Overloading, Constructors – Parameterized Constructors, Constructor Overloading, Cleaning-up unused Objects. Class Variables & Method-static Keyword, this Keyword, One-Dimensional Arrays, Two-Dimensional Arrays, Command-Line Arguments, Inner Class.

Inheritance: Introduction, Types of Inheritance, extends Keyword, Examples, Method Overriding, super, final Keyword, Abstract classes, Interfaces, Abstract Classes Verses Interfaces.

Packages: Creating and Using Packages, Access Protection, Wrapper Classes, String Class, StringBuffer Class.

**Unit - III**

Exception: Introduction, Types, Exception Handling Techniques, User-Defined Exception.

Multithreading: Introduction, Main Thread and Creation of New Threads –By Inheriting the Thread Class or Implementing the Runnable Interface, Thread Lifecycle, Thread Priority and Synchronization.

Input/Output: Introduction, java.io Package, File Streams, FileInputStream Class, FileOutputStream Class, Scanner Class, BufferedInputStream Class, BufferedOutputStream Class, RandomAccessFile Class.

**Unit - IV**

Applets: Introduction, Example, Life Cycle, Applet Class, Common Methods Used in Displaying the Output (Graphics Class).

Event Handling: Introduction, Types of Events, Example.

AWT: Introduction, Components, Containers, Button, Label, Checkbox, Radio Buttons, Container Class, Layouts.

Swings: Introduction, Differences between Swing and AWT, JFrame, JApplet, JPanel, Components in Swings, Layout Managers, JTable.

**Text Book:**


1. Sachin Malhotra, Saurabh Choudhary, Programming in Java (2e)

**References:**

1. Bruce Eckel, Thinking in Java (4e)
2. Herbert Schildt, Java: The Complete Reference (9e)
3. Y. Daniel Liang, Introduction to Java Programming (10e)
4. Paul Deitel, Harvey Deitel, Java: How To Program (10e)
5. Cay S. Horstmann, Core Java Volume I –Fundamentals (10e)

Department of Computer Science, KU

With Effect from the Academic Year 2019-2020

  
D. S. RAMIA  
Chairperson BOS  
Department of Computer Science  
KAKATIYA UNIVERSITY  
Warangal- 506 009 (T.S.)

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**SEMESTER – V**  
**Programming in Java Lab**

Practical      3 Hours/Week      1 Credit      Marks: 25

**Note:**

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
  - In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
  - External Vice-Voce is compulsory.
1. Write a program to find the largest of n natural numbers.
  2. Write a program to find whether a given number is prime or not.
  3. Write a menu driven program for following:
    - a. Display a Fibonacci series
    - b. Compute Factorial of a number
  4. Write a program to check whether a given number is odd or even.
  5. Write a program to check whether a given string is palindrome or not.
  6. Write a program to print the sum and product of digits of an Integer and reverse the Integer.
  7. Write a program to create an array of 10 integers. Accept values from the user in that Array. Input another number from the user and find out how many numbers are equal to the number passed, how many are greater and how many are less than the number passed.
  8. Write a program that will prompt the user for a list of 5 prices. Compute the average of the prices and find out all the prices that are higher than the calculated average.
  9. Write a program in java to input N numbers in an array and print out the Armstrong numbers from the set.
  10. Write java program for the following matrix operations:
    - a. Addition of two matrices
    - b. Transpose of a matrix
  11. Write a java program that computes the area of a circle, rectangle and a Cylinder using function overloading.
  12. Write a Java program for the implementation of multiple inheritance using interfaces to calculate the area of a rectangle and triangle.
  13. Write a java program to create a frame window in an Applet. Display your name, address and qualification in the frame window.
  14. Write a java program to draw a line between two coordinates in a window.
  15. Write a java program to display the following graphics in an applet window.
    - a. Rectangles      b. Circles
    - c. Ellipses      d. Arcs      e. Polygons
  16. Write a program that reads two integer numbers for the variables a and b. If any other character except number (0-9) is entered then the error is caught by NumberFormatException object. After that ex.getMessage () prints the information about the error occurring causes.
  17. Write a program for the following string operations:
    - a. Compare two strings      b. concatenate two strings      c. Compute length of a string
  18. Create a class called Fraction that can be used to represent the ratio of two integers. Include appropriate constructors and methods. If the denominator becomes zero, throw and handle an exception.

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