

MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT (AN AUTONOMOUS INSTITUTION) (Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad) Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act, 1956

# DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING 2440576 DESIGN AND ANALYSIS OF ALGORITHM through JAVA LAB

### B. Tech. II Year-II Sem

L / T / P / C 0 / 0 / 2 / 1

#### **COURSE OUTCOMES - CO'S**

- Make use of operators, precedence of operators, associativity while evaluating expressions in program statements.
- Make use of the concept of class and objects with access control and polymorphism techniques to represent real world entities
- Utilize Greedy Technique or principle of Optimality for finding solutions to optimization problems
- Compare the efficiencies of traversal problems using different Tree and Graph traversal algorithms
- Utilize Backtracking method for solving Puzzles involving building solutions incrementally

# LIST OF EXPERIMENTS:

- 1. a. Use Eclipse or Net bean platform and acquaint with the various menus. Create a test project, add a test class, and run it. See how you can use auto suggestions, auto fill. Try code formatter and code refactoring like renaming variables, methods, and classes. Try debug step by step with a small program of about 10 to 15 lines which contains at least one if else condition and a for loop.
  - b. Write a java program that prints all real solutions to the quadratic equation ax2 +bx+c=0. Read in a, b, c and use the quadratic formula.
  - c. Write a java program to implement Fibonacci series.
  - 2. Write Java Programs to perform following:
  - a. To count occurrence of each character in a string.
  - b. To remove duplicate words from a string.
  - c. To print all permutations of a string.
  - 3. Write a java program to implement method overloading and constructors overloading.
  - a. Write a java program to implement method overriding.
  - b. Write a Java program to create an abstract class named Shape that contains two integers and an empty method named print Area (). Provide three classes named Rectangle, Triangle, and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method print Area () that prints the area of the given shape.



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- 4. Write a java program to check whether a given string is palindrome.
- a. Write a Java program to create an abstract class named Shape that contains two integers and an empty method named print Area (). Provide three classes named Rectangle, Triangle, and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method print Area () that prints the area of the given shape.

5. a.Write a Java program that implements a multi-thread application that has three threads. First thread generates random integer every 1 second and if the value is even, second thread computes the square of the number and prints. If the value is odd, the third thread will print the value of cube of the number.

b.Write a Java program that correctly implements the producer – consumer problem using the concept of inter thread communication.

- 6. Write programs to implement following using Collection Framework:
- a. to add, retrieve & remove element from Array List
- b. to Sort & reverse the LinkedList elements
- c. to sort Array List using Comparable and Comparator

7. Write programs to implement following using Collection Framework:

- a. to copy elements from HashSet to Array
- b. to remove duplicate key from hashtable
- c. to iterate TreeMap

8. Write a program to implement Knapsack problem using greedy method.

9. Write a program to implement Job sequencing with deadlines and Single source shortest path problem using Greedy Method

10. Write a program to implement All pairs Shortest path and 0/1 Knapsack problem using Dynamic Programming

11. Write a program to implement Optimal Binary Search Tree using Dynamic Programming

12. Write a program to implement n-Queen"s problem and Sum of subsets using backtracking method.

13. Write a program to implement Travelling sales person using branch and bound, dynamic programming