Hajee Mohammad Danesh Science and Technology University

B.Sc. (Engineering) in CSE Course Code: CSE 204 Data Structures Sessional

Course Teacher: Professor Dr. Ashis Kumar Mandal

Programming Problems:

- 1) Write a program that finds the prime numbers using sieve method.
- 2) Write a program that finds the largest and smallest elements in an array.
- 3) An array A Containing N elements is given. Write a program that captures the sum of array elements.
- 4) Write a program to find whether the array of integers contains a duplicate number.
- 5) Write a program to insert a number at a given location in an array.
- 6) Write a program to delete a number from a given location in an array.
- 7) Write a program to merge two sorted arrays.
- 8) 8. Write programs for implementing the following sorting methods to arrange a list of integers/strings in ascending/descending order:
 - a) Bubble Sort
 - b) Selection Sort
 - c) Insertion Sort
- 9) Write programs for search an element from a list of integers/strings
 - a) Liner Search
 - b) Binary Search
- 10) Write a program to read and display a matrix.
- 11) Write a program to add and multiply two matrices.
- 12) Write a program that takes a matrix A and finds its transpose A^T and displays it.
- 13) Write a program that computes the sum of diagonal elements of a square matrix.
- 14) Write a program to find the length of a string.
- 15) Write a program to concatenate two strings.
- 16) Write a program to compare two strings.
- 17) Write a program to reverse a given string.
- 18) Write a program to extract a substring from a given string.
- 19) Write a program to insert a string in the main text.
- 20) Write a program to delete every occurrence of a pattern from a text.
- 21) Write a program to replace a pattern with another pattern in the text.
- 22) Write a program to develop the first pattern matching algorithm (Brute Force based).
- 23) Write a program to develop the second pattern matching algorithm (Finite Automata based).
- 24) Write a program that uses functions to perform the following operations on singly linked list:
 - a) Creation
 - b) Insertion
 - c) Deletion
 - d) Traversal

- 25) Write a program to create a circular linked list. Perform insertion and deletion at the beginning and end of the list.
- 26) Write programs that uses stack operations to convert a given infix expression into its postfix equivalent. Implement the stack using an array.
- 27) Write a Program in C to Implement
 - a) Stacks using arrays
 - b) Stacks using linked list
 - c) Queue suing arrays
 - d) circular queue using arrays
- 28) Write a program to evaluate a postfix expression.
- 29) Write a program to convert an infix notation to postfix notation
- 30) Write a program to calculate the factorial of a given number.
- 31) Write a program to print the Fibonacci series using recursion.
- 32) Write a program to solve the Towers of Hanoi Problem using recursion.
- 33) Write a program to calculate the factorial of a given number.
- 34) Write a program to demonstrate several tree operations
 - a) Insertion
 - b) Inorder
 - c) Preorder
 - d) Postorder
- 35) Write a program to create a binary search tree
- 36) Write a program to create a graph of n vertices using an adjacency list.
- 37) Write a program to implement Warshall's algorithm to find the path matrix
- 38) Write a program to implement Warshall's algorithm to find the all pair shortest path
- 39) Create a word processor using C/C++. It should be menu driven program.
 - a) Text must be read from the file and after processing written into file
 - b) Number of line, characters, words, etc
 - c) Find a pattern from the text
 - d) Insert, delete, append a string
 - e) Replace a string
- 40) Using C structure create student records of CSE L2-I students. It should be menu driven program.
 - a) Fields are Roll no, Name, CGPA, address
 - b) Display the records.
 - c) Insert a new record in desire location
 - d) Delete a record from a desire location
 - e) Searching a record by Roll no
 - f) Sorting the records.