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.