

JALPAIGURI GOVERNMENT ENGINEERING COLLEGE

JALPAIGURI- 735 102, WEST BENGAL, INDIA

Department of Computer Science & Engineering

Data Structure & Algorithm Lab Assignments

Paper Code: CS 392

Credits: 2

Day 1: Assignments

- 1.1 Write a program in C language to generate first n Fibonacci numbers using (A) While loop (B) for loop (C) do while loop. Where the value of n is taken as input dynamically.
- 1.2 Write a menu driven program in C language to perform the following operations:
 - 1→To check whether a given number is prime or not?
 - 2→To check whether a given number is Armstrong or not?
 - 3→Find out the largest number among three numbers.
 - 4→exit
- 1.3 Write a program in C language to store all elements in an array and display them and search the position of a given item in functional way.
- 1.4 Write a program in C language to take a string as an input having length n (dynamically) and generate all possible strings from the n symbols of your given string and display the total number of strings.
For example:
Input: ABC
Output:
ABC
ACB
BCA
BAC
CAB
CBA
Total number of strings: $3! = 6$
- 1.5 Write a program in C language to calculate the length of given string and reverse this given string without using any string library function.

Day 2: Assignments

- 2.1 Write a menu driven program in C to create the diagrams of line, circle, rectangle and triangle using functions and perform the following operations on your created diagrams:
 - a) Translation operation
 - b) Rotation operation with respect to a given point
 - c) Scaling operation

Day 3: Assignments

- 3.1 Write a program in C to implement an Analogue Clock and Digital Clock using graphics where the time will be set by the user according his / her choice (manually or system clock).
- 3.2 Write a menu driven program in C to implement the following basic operation of FILE:
 - A) Reading a file
 - B) Writing a file
 - C) Closing a file
 - D) Reading and writing strings to a file
 - E) Reading and writing binary files

- 3.3 Write a menu driven program in C to implement the following basic operation of FILE:
- a) Print the contents of file
 - b) Copy contents of one file to another file
 - c) Merge contents of two file into a third file
 - d) Delete a specific file

Day 4: Assignments

- 4.1 Write a menu driven program in C to read name and marks of n number of students from user and store them in a file and perform the following operations using functions:
- a) Append new record of a student to the existing file
 - b) Delete a record of a specific student
 - c) Update a field of student record
 - d) Display all records
- 4.2 Write program in C to convert a given gray level image file (*.pgm) into negative image.
- 4.3 Write a program in C to implement a student database (*.CSV File) and perform the insertion, deletion, updating and searching operation on your created CSV file.

Day 5: Assignment

- 5.1 Write a program in C to perform the following operations in Array data structure:
- a) Creation
 - b) Display
 - c) Linear Search
 - d) Binary Search
 - e) Insertion Operation
 - f) Deletion by a given position
 - g) Deletion by a given item

Day 6: Assignment

- 6.1 Write a program in C to perform the following Sorting operations using Array data structure:
- a) Creation
 - b) Display
 - c) Selection sort
 - d) Bubble sort
 - e) Modified bubble sort
 - f) Insertion operation
 - g) Merge Sort

Day 7: Assignment

- 7.1 Write a program in C to perform the following operation of single Dynamic Link list:
- a. Creation
 - b. Display
 - c. Display using recursive function
 - d. Searching
 - e. Insertion
 - f. Deletion
 - g. Reverse print
 - h. Reverse the linked list

Day 8: Assignment

- 8.1 Write a program in C to perform the following operation of dynamic double link list.
- Creation
 - Display
 - Display in recursive way
 - Searching
 - Insertion
 - Deletion
 - Reverse print
 - Reverse the linked list

Day 9: Assignment

- 9.1 Write a program in C to implement the following operations on circular linked list:
- Creation
 - Display
 - Insertion
 - Deletion
 - Searching
- 9.2 Write a program in C to implement the following functions in stack:
- Push
 - Pop
 - Display

Day 10: Assignment

- 10.1 Write a program in C to convert a given infix expression into an equivalent postfix expression.
- 10.2 Write a program to implement the postfix evaluation algorithm.

Day 11: Assignment

- 11.1 Write a program in C to implement a) static queue b) dynamic queue c) circular queue to perform the following operations:
- Insert
 - delete
 - display
- 11.2 Write a program in C to implement tower of Hanoi problem

Day 12: Assignment

- 12.1 Write a program in C to implement Binary Search Tree (BST) to perform the following operations
- Creation
 - In order traversal
 - Post order traversal
 - Pre order Traversal
 - Searching
 - Insertion
 - Deletion

Day 13: Assignment

- 13.1 Write a program in C to implement Heap Tree (Max Heap) using Array to perform the following operations
- Creation
 - In order traversal
 - Post order traversal
 - Pre order Traversal
 - Sorting
 - Display the original list and sorted list