

Assignment - 02

Data Structures

1. Implement a linked list to create and manage a set of elements. Set of elements contains integer values i.e. $S = \{4,5,6\}$. No Elements are repeated in a Set. Also implement a method which shows all possible subsets of the created set by user i.e. $\{\{4\}, \{5\}, \{6\}, \{4,5\}, \{4,6\}, \{5,6\}, \{4,5,6\}, \{\emptyset\}\}$.
2. Implement a program to generate a linked list. For any unsorted linked list, write a method that will delete any duplicates from the linked list without using a temporary buffer.
3. Implement a program for Merging two sorted linked lists. Collect 20 integers from the command line and divide them equally into two unsorted lists as input.
4. Write a program to find the middle element of a singly linked list in one pass. Collect 30 integers from the command line as unsorted list input.
5. Write a program to illustrate stack operation using a singly linked list.
6. Write a program to find if a number is palindrome or not using a singly linked list.
7. Write a program to collect a weighted undirected graph as input from the user. Find MST using Prim's Algorithm. [You can directly scan adjacency list/ matrix from user]
8. Write a program to collect a weighted undirected graph as input from the user. Find MST using Krushkal's Algorithm. [You can directly scan the adjacency list/ matrix from the user].
9. Write a program to collect a weighted directed graph as input from the user. Find shortest path from source vertex entered by user to all other vertices. [You can directly scan adjacency list/ matrix from user]

Note:

- For graph problems include/ draw the graph considered for calculation.
- For Linked list problems you can use a common implementation file. Write the file at the first (single time).