Data Structures and Algorithms – Assignment 1

Array & Linked List

1. Write a Python program that uses functions to perform the following operations on array
    a. Creation
    b. Insertion (at start, at end, using index, based on value)
    c. Deletion (at start, at end, using index, based on value)
    d. Traversal
    e. Searching an element. (based on value, based on index)
2. Write a Python program that uses functions to perform the following operations on singly linked list.
    a. Creation
    b. Insertion (as first node, as last node, in between node)
    c. Deletion (first node, last node, in between node)
    d. Traversal
    e. Searching an element.
3. Write a Python program that uses functions to perform the following operations on doubly linked list
    a. Creation
    b. Insertion (as first node, as last node, in between node)
    c. Deletion (first node, last node, in between node)
    d. Traversal
    e. Searching an element.
4. Write a Python program that uses functions to perform the following operations on circular linked list
    a. Creation
    b. Insertion
    c. Deletion
    d. Traversal
    e. Searching an element.

5. Write a Python program to remove duplicates from an unsorted linked list.
6. Write a Python program to implement an algorithm to find the k^{th} to the last element of a singly linked list.
7. Write a Python program to detect if a linked list has a loop in it.