Assignment-56 : A Job Ready Bootcamp in C++, DSA and IOT

DSA Singly Linked List

1. Given a linked list and a key ‘X‘ in, the task is to check if X is present in the linked list or not.
   Examples:
   Input: 14->21->11->30->10, X = 14
   Output: Yes
   Explanation: 14 is present in the linked list.
   Input: 6->21->17->30->10->8, X = 13
   Output: No

2. Write a function that takes a list sorted in non-decreasing order and deletes any duplicate nodes from the list. The list should only be traversed once.
   For example if the linked list is 11->11->11->21->43->43->60 then removeDuplicates() should convert the list to 11->21->43->60.

3. Given a singly linked list, write a function to swap elements pairwise.
   Input : 1->2->3->4->5->6->NULL
   Output : 2->1->4->3->6->5->NULL
   Input : 1->2->3->4->5->NULL
   Output : 2->1->4->3->5->NULL
   Input : 1->NULL
   Output : 1->NULL

4. Write a function that moves the last node to the front in a given Singly Linked List.
   Examples:
   Input: 1->2->3->4->5
   Output: 5->1->2->3->4
   Input: 3->8->1->5->7->12
   Output: 12->3->8->1->5->7

5. Given a linked list, check if the linked list has a loop or not. The below diagram shows a linked list with a loop.
6. Given a singly linked list and a key, count the number of occurrences of the given key in the linked list. For example, if the given linked list is 1->2->1->2->1->3->1 and the given key is 1, then the output should be 4.
7. Given a Linked List and a number N, write a function that returns the value at the Nth node from the end of the Linked List.
   Examples:
   Input: 1 -> 2 -> 3 -> 4, N = 3
   Output: 2
   Input: 35 -> 15 -> 4 -> 20, N = 4
   Output: 35

8. Create a Stack using a singly linked list.

9. In a singly linked list of characters, write a function that returns true if the given list is a palindrome, else false.
10. Given a singly linked list, find the middle of the linked list. For example, if the given linked list is 1->2->3->4->5 then the output should be 3.
    If there are even nodes, then there would be two middle nodes, we need to print the second middle element. For example, if the given linked list is 1->2->3->4->5->6 then the output should be 4.