Assignment IV
Lab MC504

1Q.

Write a C program to check if the input string is palindrome or not using an implementation of stack with push, pop, overflow (stack full), and underflow (stack empty) methods.

OR

1Q.

Write a C program to use array implementation of stack with push, pop, overflow (stack full) and underflow (stack empty) methods to compute factorial(x) for x=1,2,...,10.

2Q:

A linked list is said to contain a *cycle* if any node is visited more than once while traversing the list. Given a pointer to the head of a linked list, determine if it contains a cycle. If it does, return 1. Otherwise, return 0.
E.g.
Head refers to the list of nodes 1->2->3->NULL.
The numbers shown are the node numbers, not their data values. There is no cycle in this list so return 0 .
Head refers to the list of nodes 1->2->3->1.
There is a cycle where node 3 points back to node 1, so return 1 .

E.g.2

1->2->3->4->5->2

There is a cycle where node 5 points back to node 2, so return 1 .

Returns

- *Int:1* if there is a cycle or 0 if there is not

Note: If the list is empty, the head will be *null.*

Things to be remember while solving

1. Duplicates values are not allowed in linked list

    NOT ALLOWED

Node 1	Node 2	Node 3	Node 4
1| address(node 2)	2| address(node 3)	3|address(node 4)	2|NULL

    ALLOWED

Node 1	Node 2	Node 3	Node 4
1| address(node 2)	2| address(node 3)	3|address(node 4)	5| address(node 2)

2. Use single pointer for each node

3Q.

Implement a single linked list using C. Each node will store an integer value. Assume all the integers in the list are distinct. The output should be as follows:

Enter your choice:

a. Add a node before/after a specific node (with specific data)

b. Delete a node before/after a specific node (with specific data)

c. Search a node with specific data whether present or not.

d. Update data filled of a specific node (with specific data)

e. Print data stored in each node.