

Assignment IV
Lab MC504

Send your assignment solution to mc504lab@gmail.com.

Deadline: 03.02.2021, 12 midnight.

Put all files into one folder create a zip and name it as <RollNo>_<Assignment_<No> and mention the files name as: Q1.c, Q2.c and so on. **In each file please mention your roll number.**

Subject of mail should be: <RollNo>_Assignment_<No>. For example : 1911MC04_Assignment_II.

You have to take inputs from user. Otherwise marks (40%) will be deducted.

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.