CS69201: Computing Lab-1
Assignment 2
August 7, 2024
[TIme 2:15 PM - 3.45 PM]

========== Instructions==========

1. In the case of user input assume only valid values will be passed as input.
2. You can use C or C++ as the programming language. **However, you are not allowed to use any STL libraries in C++**
3. Regarding Submission: For each question create a separate C file. -> <rollno>_Q1.c, <rollno>_Q2.c, <rollno>_Q3.c,<rollno>_Q4.c. Create a zip file of all these C files in the name <rollno>_A2.zip and submit it to Moodle. For example, if your roll number is 24CS60R15, then your file names will be 24CS60R15_Q1.c, 24CS60R15_Q2.c, 24CS60R15_Q3.c, 24CS60R15_Q4.c and your zip file name will be 24CS60R15_A2.zip.
4. **Inputs should be taken from the user through the terminal and outputs should be displayed on the terminal**.
5. You have been provided a boiler plate code. You may use it according to your requirement.

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Question 1 [20]

Given a linked list and an integer. Find if the integer is present in the linked list. Output 1 if the integer is present else output 0.

Use **both recursive and iterative** approaches.

Example :

Input :
1->2->3->4
3
Output :
1

Question 2 [30]

Given two sorted linked lists, write a code to merge the two linked lists **in place** to give a single sorted linked list.

Use **both recursive and iterative** approaches. **[write two separate functions]**

Example

Input: a: 5->10->15, b: 2->3->20
Output: 2->3->5->10->15->20

Input: a: 1->1, b: 2->4
Output: 1->1->2->4

Question 3 [20]

Given two numbers represented by linked lists, write a program that returns the sum in the form of a linked list.

Example

Input:
List1: 5->6->3 // represents number 563
List2: 8->4->2 // represents number 842
Output:
Resultant list: 1->4->0->5 // represents number 1405
Explanation: 563 + 842 = 1405

Question 4 [30]

Given two numbers represented by linked lists, write a program that returns the multiplication modulo 10^9+7

Example

Input:
9->4->6
8->4
Output : 79464