2. Add Two Numbers

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Problem Number	2
Tags	Medium
link	https://leetcode.com/problems/add-two-numbers/

Description

You are given two non-empty linked lists representing two non-negative integers. The digits are stored in reverse order, and each of their nodes contains a single digit. Add the two numbers and return the sum as a linked list.

Approach

- Create a new list, add value of list A and list B node by node while maintaining carry
- Make sure to check it working for few things → A and B of same size, A and B of different size, carry remaining after addition (like 99+99)

```
/**
 * Definition for singly-linked list.
 * struct ListNode {
 *     int val;
 *     ListNode *next;
 *     ListNode() : val(0), next(nullptr) {}
 *     ListNode(int x) : val(x), next(nullptr) {}
 *     ListNode(int x, ListNode *next) : val(x), next(next) {}
 * };
 */
class Solution {
public:
    ListNode* addTwoNumbers(ListNode* l1, ListNode* l2) {
        int carry = 0; int value;

        ListNode *head = new ListNode();
        ListNode *dummyHead = head;

        while (l1 != NULL and l2 != NULL) {
            value = l1->val + l2->val + carry;
```

```
            dummyHead->next = new ListNode(value%10);
            dummyHead = dummyHead->next;

            carry = value / 10;
            l1 = l1->next;
            l2 = l2->next;
        }
        while (l1 != NULL) {
            value = l1->val + carry;
            dummyHead->next = new ListNode(value%10);
            dummyHead = dummyHead->next;
            l1 = l1->next;
            carry = value/10;
        }
        while (l2 != NULL) {
            value = l2->val + carry;
            dummyHead->next = new ListNode(value%10l);
            dummyHead = dummyHead->next;
            l2 = l2->next;
            carry = value/10;
        }
        if (carry != 0) {
            dummyHead->next = new ListNode(carry);
        }
        return head->next;
    }
};
```