Add Two Numbers ★ Key concept to iteratively add new node in linked list.

: 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 two numbers and return the sum as a linked list.

Ex)

2 → 4 → 3

5 → 6 → 4

Input: $l_1 = [2, 4, 3]$
$l_2 = [5, 6, 4]$

Output: $[7, 0, 8]$

Explaination: $342 + 465 = 807$

Ex 2)

9 → 9 → 9 → 9 → 9 → 9 → 9

9 → 9 → 9 → 9

Input: $l_1 = [9,9,9,9,9,9,9]$
$l_2 = [9,9,9,9]$

Output: $[8,9,9,9,0,0,0,1]$

Explaination: $9999999 + 9999 = 10009998$

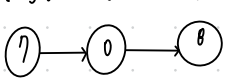
Idea: Need 'carry' and 'digit'

ex) 9+9 : carry : 1
digit: 6

2 4 3

5 6 4

digit: 7 digit: 0 digit: 7+1
carry: 0 carry: 1 carry: 0



Algorithm:

```
head = ListNode(0)
tail = head  # Pointer at new head
carry = 0
While l1 is not None or l2 is not None or carry != 0:
    get val from l1
    "       "  l2
    3rd digit & carry
    newNode = ListNode(digit)
    tail.next = newNode
    tail = tail.next
```