L40
Linked List : Classical Problems 2

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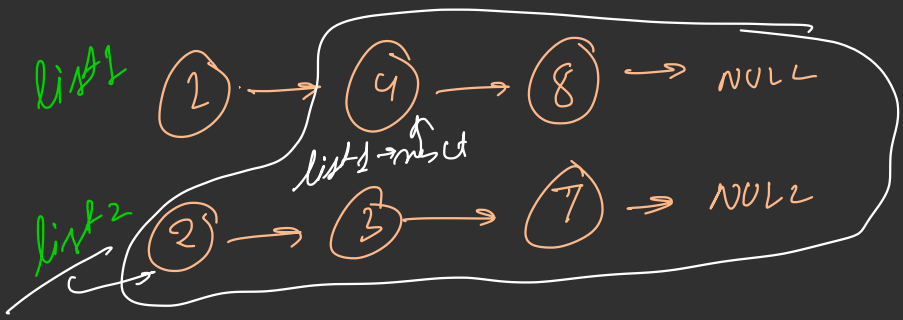
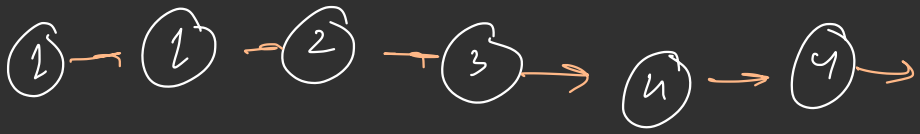
Recap

1. Solved the following problems:
    a. https://leetcode.com/problems/middle-of-the-linked-list/
        i. Find the middle node of a given linked list
    b. https://leetcode.com/problems/linked-list-cycle/description/
        i. Detect if there is a cycle in a given linked list
    c. https://leetcode.com/problems/reverse-nodes-in-k-group/description/

Let’s continue the Problem Solving



1. Merge 2 sorted Linked Lists



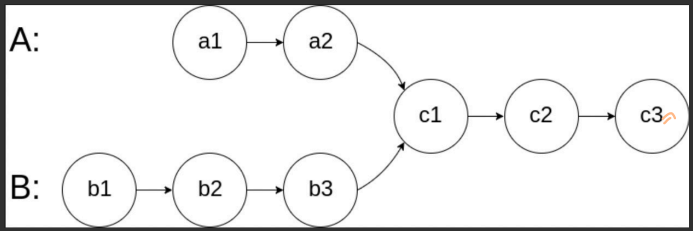
Hint : Think recursively

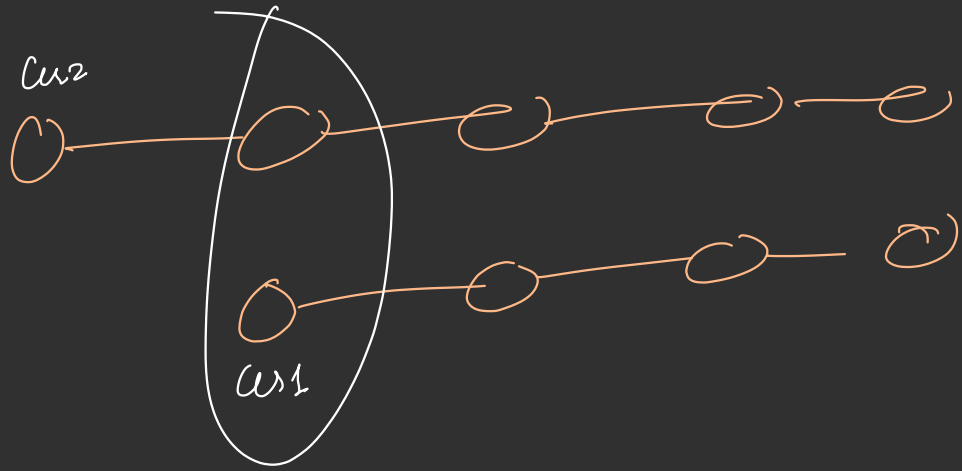
Which node will be the head for the resultant list?

Can the rest of the list be found recursively?

Let’s try to implement

2. Find the intersection point of 2 linked lists





Brute Force?

What if lengths of both LLs were equal?

What if we give a head start to the longer one?

Let’s see the solution

Should we try a much cooler approach?

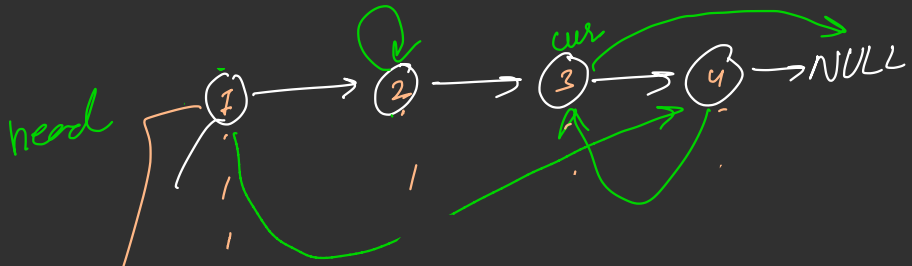
If things are done without a head start, the shorter one will reach end first, right?

What if as soon as one of them reaches the end, we start again from the start of the **other** linked list? Confusing? 🤔

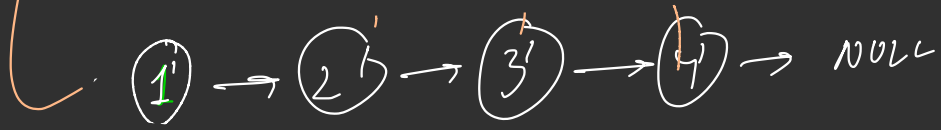
Let me draw and explain

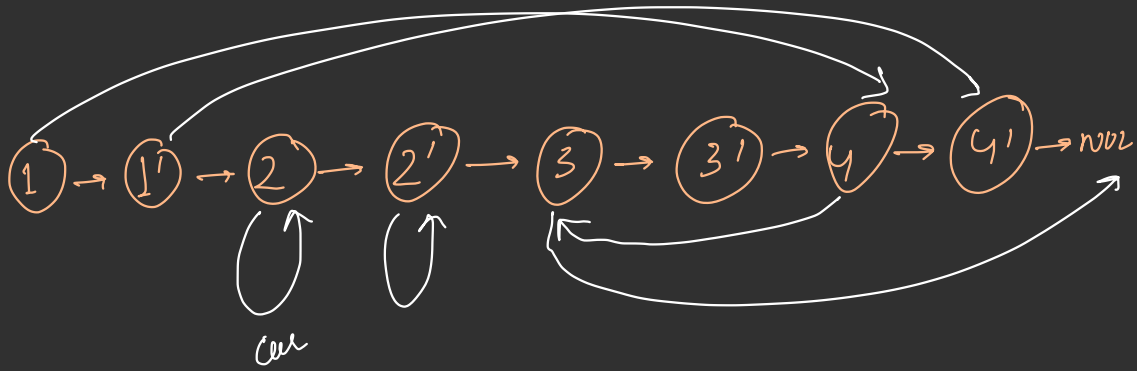
Let’s implement

1 last problem? It’s a mind bender.



3. Deep Copy with Random Pointer





cur → next → random = cur → random → next

Before that, let’s understand what Deep Copy is

Now, deep copy also needs accommodate the linking of random pointers

What if we had a mapping of old nodes to new nodes?

Ever heard of a map?

Just a brief overview of the solution

Can we do without a map? xD

A caveat : it’s tough.

Let me directly take you to the
magical (and scary) stuff.

Step 1 : Weaving the 2 linked lists

Step 2 : Assigning the random pointers

Step 3 : Unweaving and returning the deep copy

If you survived today's class,
a pat on the back from Pulkit.

Thank You!

Reminder: Going to the gym & observing the trainer work out can help you know the right technique, but you'll muscle up only if you lift some weights yourself.

So, PRACTICE, PRACTICE, PRACTICE!