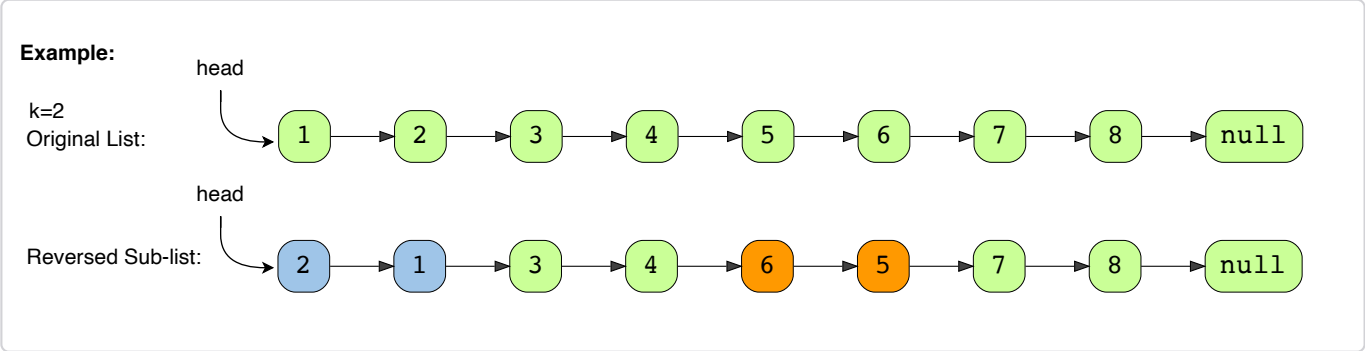
Solution Review: Problem Challenge 1

We'll cover the following

Reverse alternating K-element Sub-list (medium)#

Given the head of a LinkedList and a number ‘k’, **reverse every alternating ‘k’ sized sub-list** starting from the head.

If, in the end, you are left with a sub-list with less than ‘k’ elements, reverse it too.



Solution#

The problem follows the **In-place Reversal of a LinkedList** pattern and is quite similar to Reverse every K-element Sub-list (https://www.educative.io/collection/page/5668639101419520/5671464854355968/6119318955753472/). The only difference is that we have to skip ‘k’ alternating elements. We can follow a similar approach, and in each iteration after reversing ‘k’ elements, we will skip the next ‘k’ elements.

Code#

Most of the code is the same as Reverse every K-element Sub-list (https://www.educative.io/collection/page/5668639101419520/5671464854355968/6119318955753472/); only the highlighted lines have a majority of the changes:

Java | Python3 | C++ | JS

```
class Node {
  constructor(value, next = null) {
    this.value = value;
    this.next = next;
  }

```

```
  print_list() {
    let temp = this;
    while (temp !== null) {
      process.stdout.write(`${temp.value} `);
      temp = temp.next;
    }
    console.log();
  }
}

function reverse_alternate_k_elements(head, k) {
  if (k <= 1 || head === null) {
    return head;
  }

  let current = head,
    previous = null;
  while (current !== null) {  // break if we've reached the end of the lis
    const last_node_of_previous_part = previous;
    // after reversing the LinkedList 'current' will become the last node
    const last_node_of_sub_list = current;
    let next = null; // will be used to temporarily store the next node
```

Run Save Reset

Time complexity#

The time complexity of our algorithm will be $O(N)$ where 'N' is the total number of nodes in the LinkedList.

Space complexity#

We only used constant space, therefore, the space complexity of our algorithm is $O(1)$.

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Mark as Completed

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