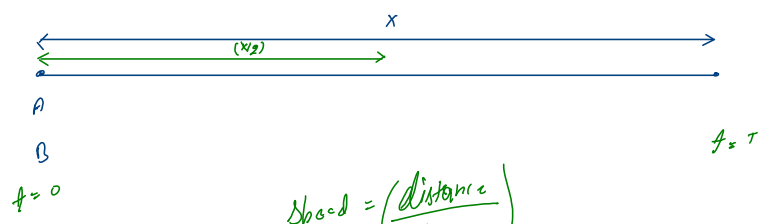
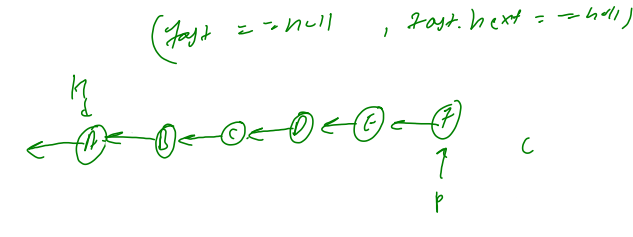
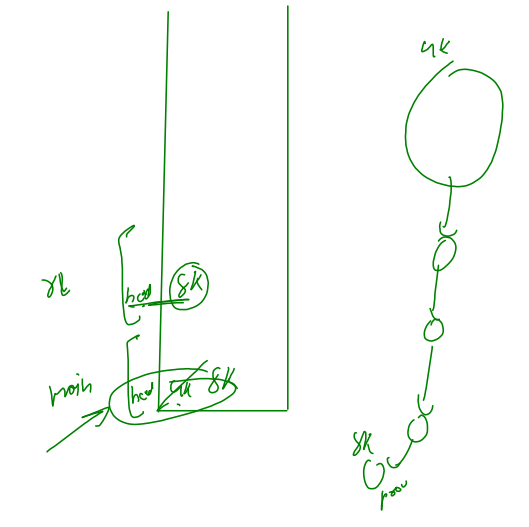


```

public ListNode reverseList(ListNode head) {
    if (head == null || head.next == null)
        return head;

    ListNode prev = null, curr = head;
    while (curr != null) {
        ListNode forw = curr.next; // backup
        curr.next = prev; // linkup
        prev = curr; // move
        curr = forw;
    }
    return prev;
}

```



$$Speed = \frac{distance}{time}$$

$$\frac{x}{V_A} = \frac{x}{2V_B}$$

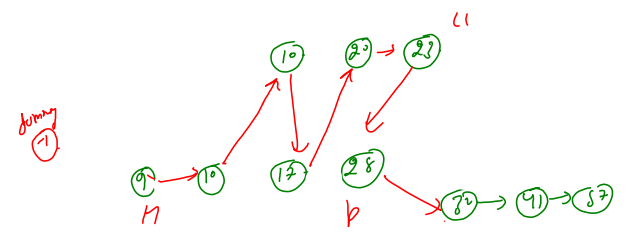
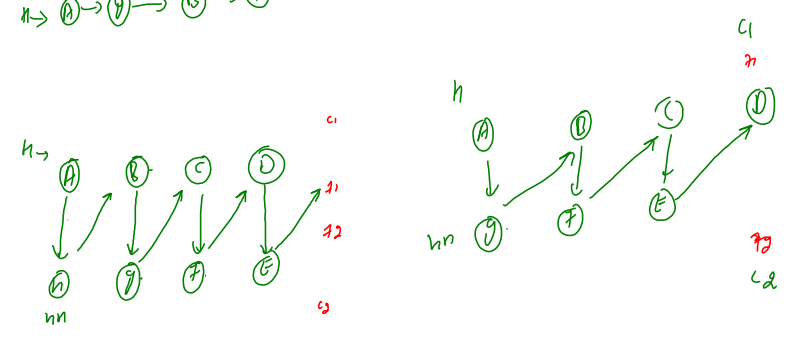
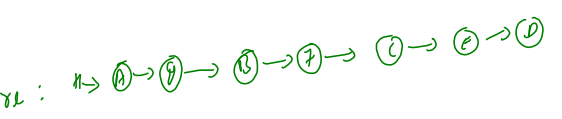
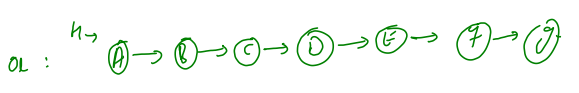
$$V_A = \frac{x}{T}$$

$$T = \frac{x}{V_A}$$

$$V_B = \frac{x}{2T}$$

$$V_A = 2V_B$$

$$V_A = 2(1)$$



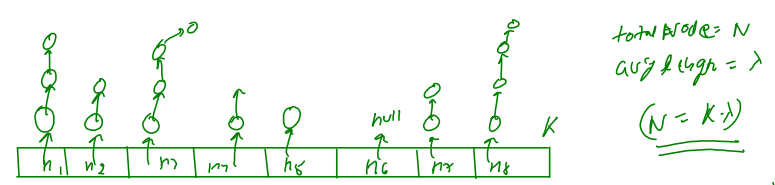
```

public ListNode mergeTwoLists(ListNode list1, ListNode list2) {
    if (list1 == null || list2 == null)
        return list1 == null ? list1 : list2;

    ListNode c1 = list1, c2 = list2, dummy = new ListNode(-1), prev = dummy;
    while (c1 != null && c2 != null) {
        if (c1.val < c2.val) {
            prev.next = c1;
            c1 = c1.next;
        } else {
            prev.next = c2;
            c2 = c2.next;
        }
        prev = prev.next;
    }
    prev.next = (c1 != null ? c1 : c2);
    ListNode head = dummy.next;
    dummy.next = null;
    return head;
}

```

$S: O(1)$
 $T: O(h+k)$



$$a_1 = (a_1 \cup h) = \lambda$$

$$a_2 = (a_2 \cup h) = \lambda + \lambda = 2\lambda$$

$$a_3 = (a_3 \cup h) = 2\lambda + \lambda = 3\lambda$$

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