

9th March

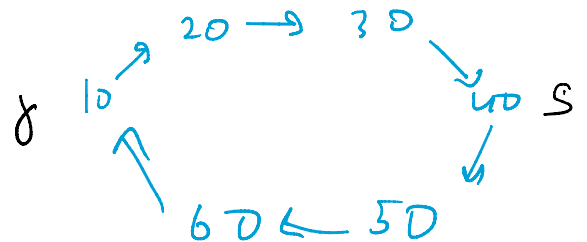
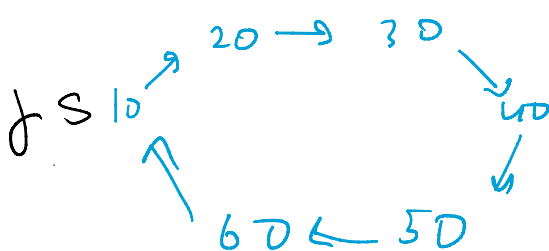
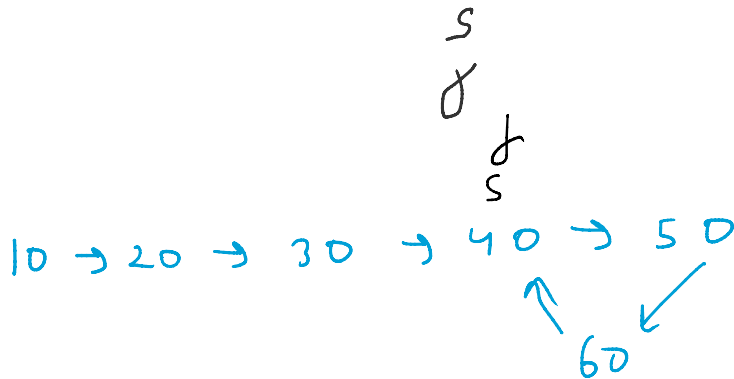
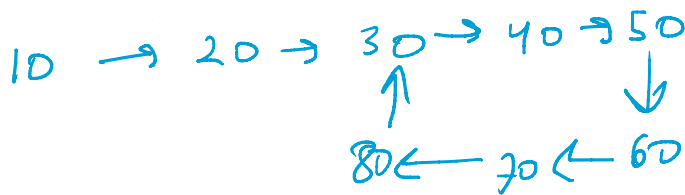
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$s \rightarrow 1 \text{ step}$

$f \rightarrow 2 \text{ steps}$

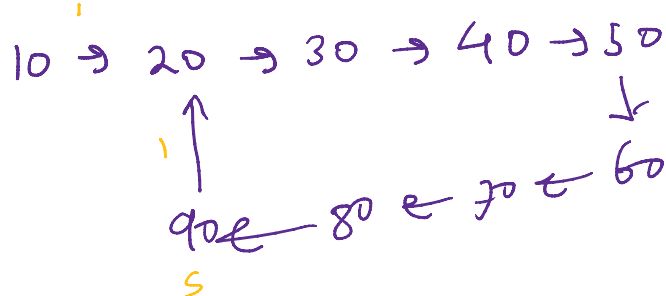
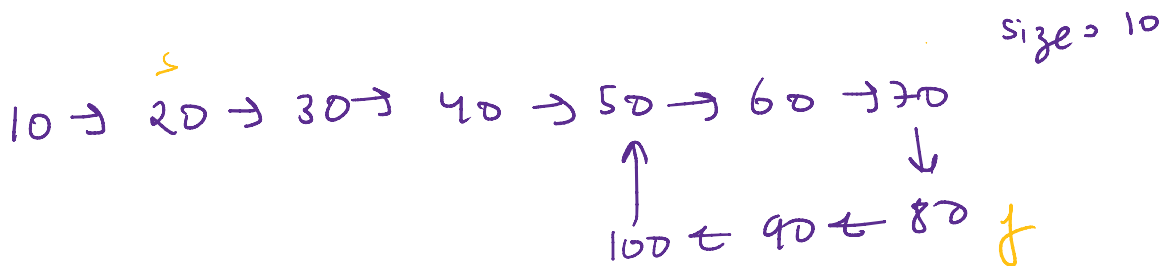
LL has Cycle:-

<https://leetcode.com/problems/linked-list-cycle/>

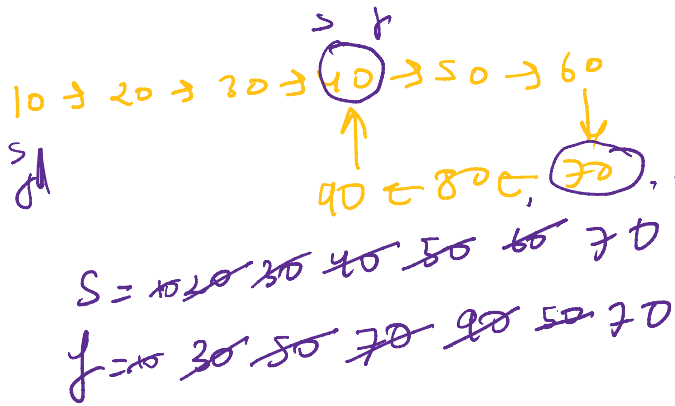


Linked List Cycle Node:-

<https://leetcode.com/problems/linked-list-cycle-ii/>

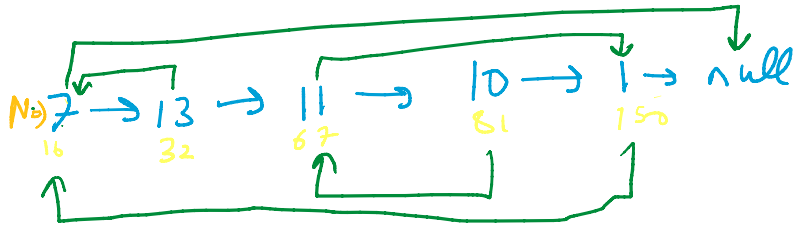
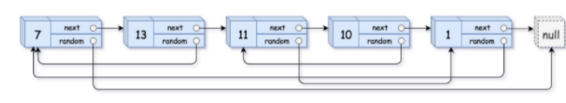
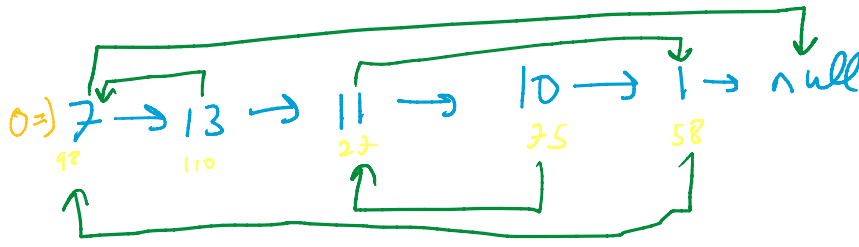


f

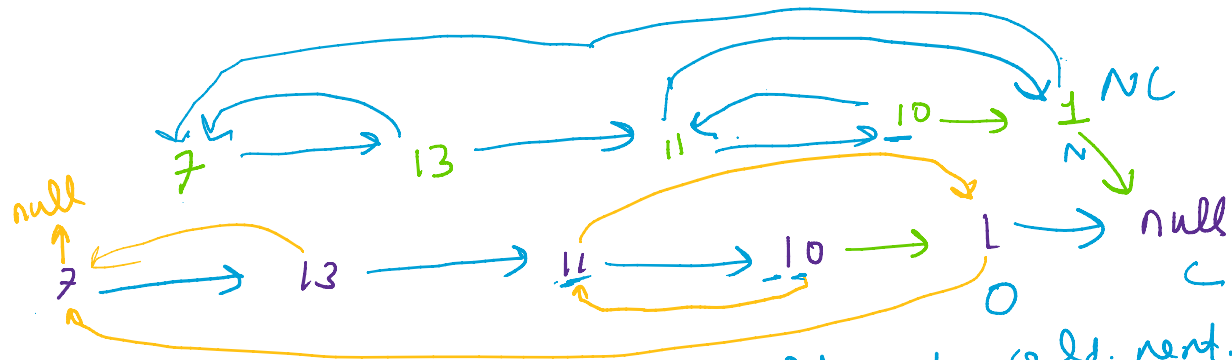


```
public ListNode detectCycle(ListNode head) {
    ListNode s = head;
    ListNode f = head;
    while (f != null && f.next != null) {
        s = s.next;
        f = f.next.next;
        if (s == f) break;
    }
    if (f == null || f.next == null) return null;
    s = head;
    while (s != f) {
        s = s.next;
        f = f.next;
    }
    return s;
}
```

LL with Random pointer :-



$$c.next.random = \underline{c.random.next}$$



$$\underline{\underline{old.next = old.next.next}}$$

$$\underline{\underline{N.next = N.next.next}}$$

