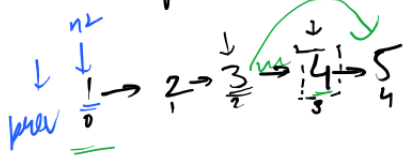
Tuesday, 27 February 2024
8:21PM

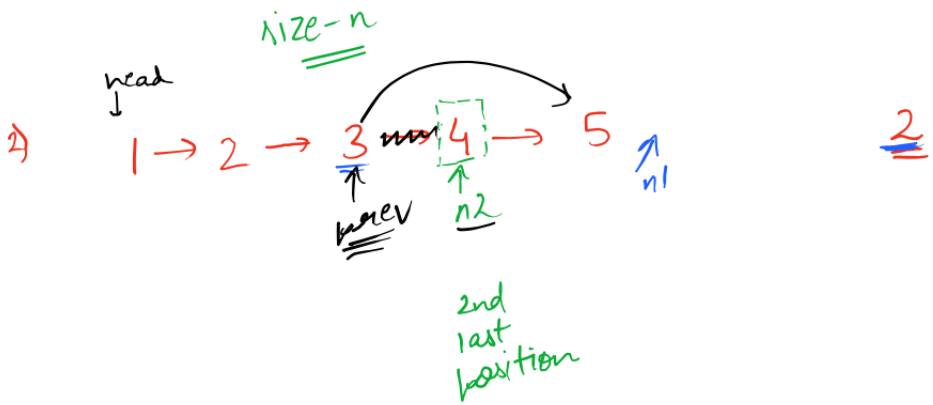
1) Find n^{th} last node.

↳ ① size, n from last



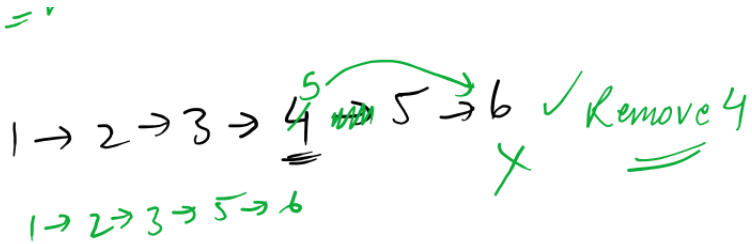
2

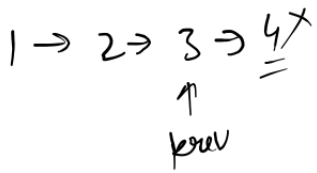
5 − 2 = 3 from start

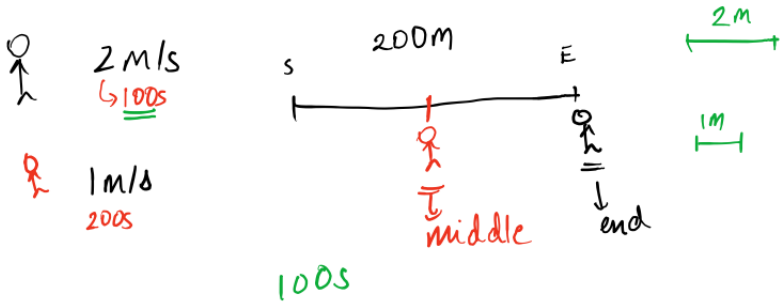


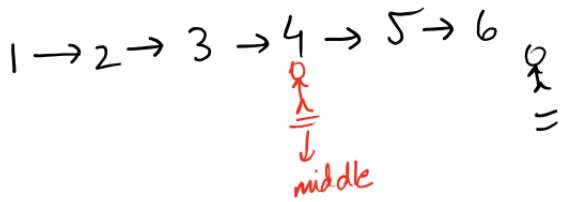
2

↳ n1 had a headstart of 2 places
when n1 is at end n2 will be
2 places behind

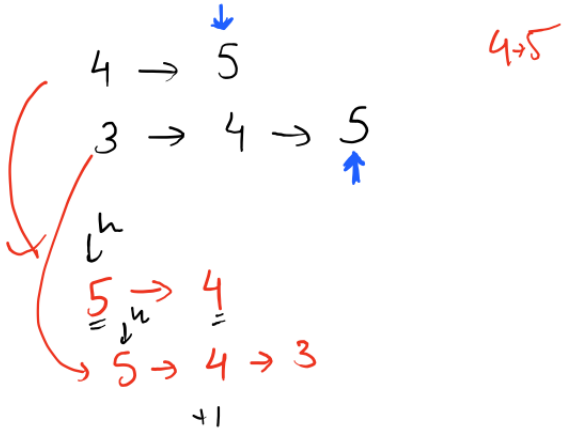




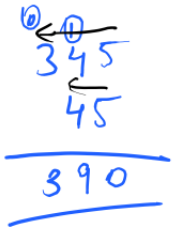


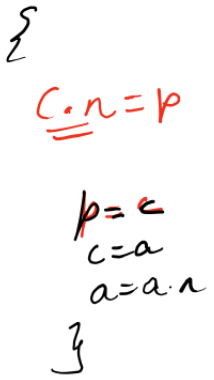


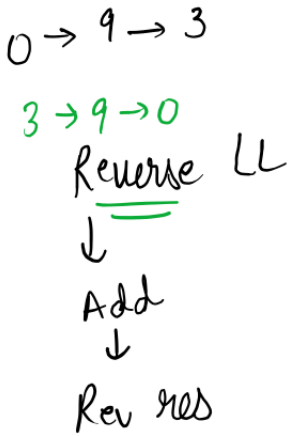
2 ptr
↳ slow → moves at 1 node at a time
↳ fast → moves at 2 nodes at a time

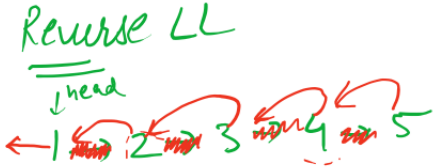

4 → 5
3 → 4 → 5
5 → 4
5 → 4 → 3
+1

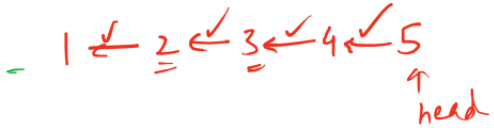
4→5


345
45
390

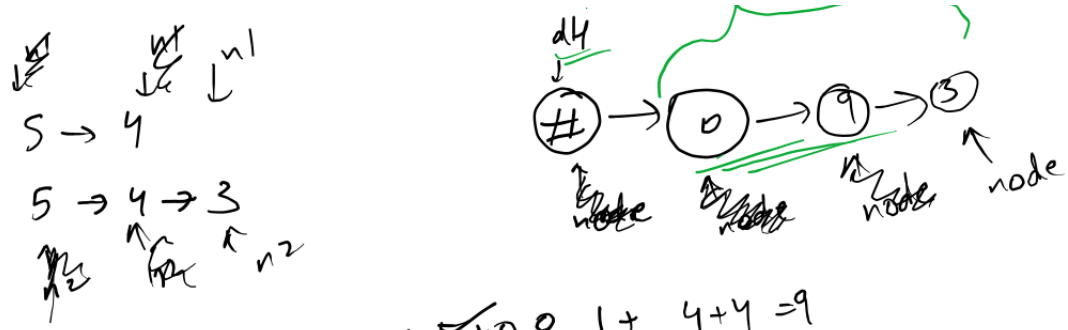

c.n=p
p=c
c=a
a=a.n


0 → 9 → 3
3 → 9 → 0
Reverse LL
Add
Rev res


Reverse LL
head


head


3 → 4



$5 \to 4$

$5 \to 4 \to 3$

sum = 5 + 5 + 0 0 1 + 4 + 4 = 9

carry = 1 0

sum = 0 + 3

= 3

$4 \to 2 \to 0$

$6 \to 9$

↳ Reverse LL

→ diff = takeover (-1)
↳ instead of carry

→ larger − smaller

3
4 2 0
6 9
5 1

$\{ \to 3 \to 0 \to 5 \}$

$\{ \to 3 \to 0 \to 6 \}$

2 → 5
2 → 5
0 → 0

2 → 4
1 → 2 → 5

24
125 ×

125
24

length is negative

↳ prefer larger

101

h1 0 → 0 → 0 → 7

↳ ✓ 7

L1 3 → 0 → 6

↓

L2 3 → 0 → 5

6 → 0 → 3

5 → 0 → 3

L1 – L2

0 → 0 → 0

0 → 0 → 0

R1 10 + 5 → 2 (1) 2 + (-1)

takeover = 1

R2 6 → 1

(1) → 9 → 0

25

16

9 → 0 → 09

5 → 2 (11)

6 → 1

take = 0 ✗ 0

```
while(l1!=null){
        int v1 = l1.data+takeover;
        l1 = l1.next;

        int v2 = 0;
        if(l2!=null){
           v2 = l2.data:
```

```
    l2 = l2.next;
  }

  int diff=0;
  // v1-v2
  if(v1>=v2){
    takeover = 0;
    diff = v1-v2;
  } else{
    // we need a takeover
    takeover = -1;
    diff = (10+v1) - v2;
  }

  Node next = new Node(diff);
  node.next = next;
  node = next;
}
```

v1 = 5 + 0

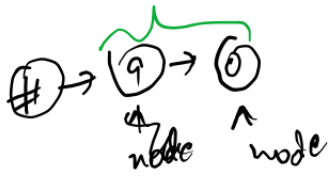
v2 = 6

diff = 9

v1 = 2 - 1 = 1

v2 = 1

diff = 0 ✓



② → 5 → 25

1 → 4 14 x

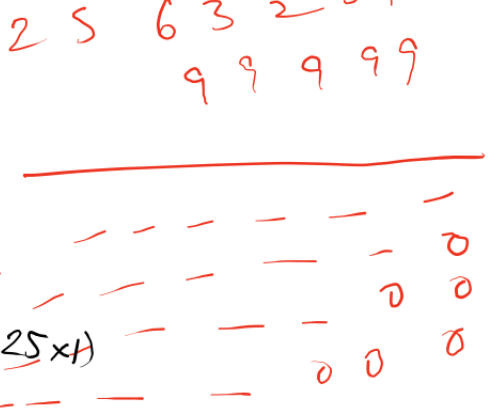
ans

1 x 25 = 25 x 10

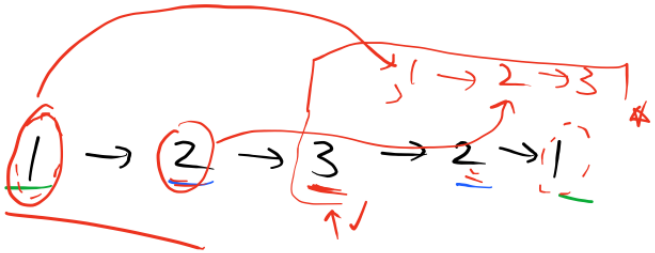
4 x 25 = 100

25 x 14

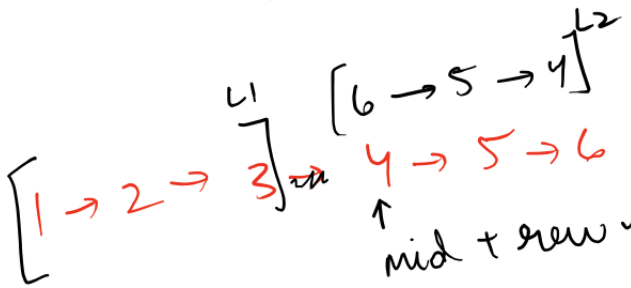
$$(((25\times10)+(25\times4))\times10)+(25\times1)$$



$$(A \times B) \% \text{ mod} = ((A \% \text{ mod}) \times (B \% \text{ mod})) \% \text{ mod}$$



1 → 2 → 3 → 2 → 1 ✓ reverse half + compare



⇒ 1 → 6 → 2 → 5 → 3 → 4