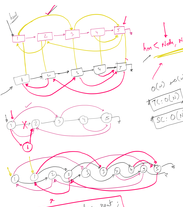
Q Given a LL, find the length of the cycle, if exists.

Clear the LL



for < slow, fast > :

O(n) slow(n)

TC: O(n)

SC: O(1)

```
y = random = x.random.next ;

x.next = y.next ;
y.next = y.next.next ;

x = x.next
y = y.next
```

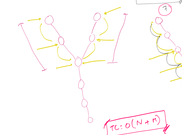
TC: O(n)

SC: O(1)

Q You are given a LL. Find the intersection of the LL.

TC: O(m+n)

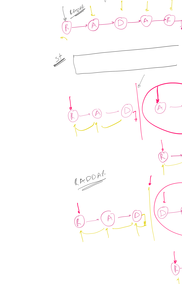
SC: O(1)



TC: O(N+M)

SC: O(1)

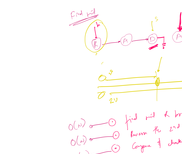
Q Given a LL. Check if it's a palindrome.



TC: O(n)

SC: O(n)

Find mid



O(n) → find mid & break the 1st half

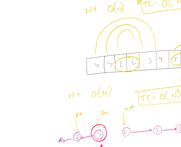
O(n) → reverse the 2nd half

O(n) → compare & check equality of 1st & 2nd half

TC: O(n)

SC: O(1)

Q Given a LL. Find the length of the largest sub-LL, which is a palindrome.



N4 O(n) TC: O(N²)

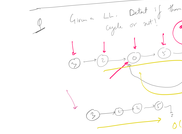
N3 O(n) TC: O(N³)

TC: O(n²)

SC: O(n²)

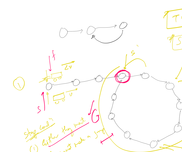
Manacher

Q Given a LL. Detect if there is a cycle or not?



TC: O(n)

SC: O(n²)



TC: O(n)

SC: O(1)

Q Find the entry node of the loop.

$d_s = m+n+k$

$d_f = m+n+k$

$d_f = 2 \cdot d_s$

$m+n+k = 2(m+n+k)$

$(n+k) = m$

m+k is a multiple of n.