

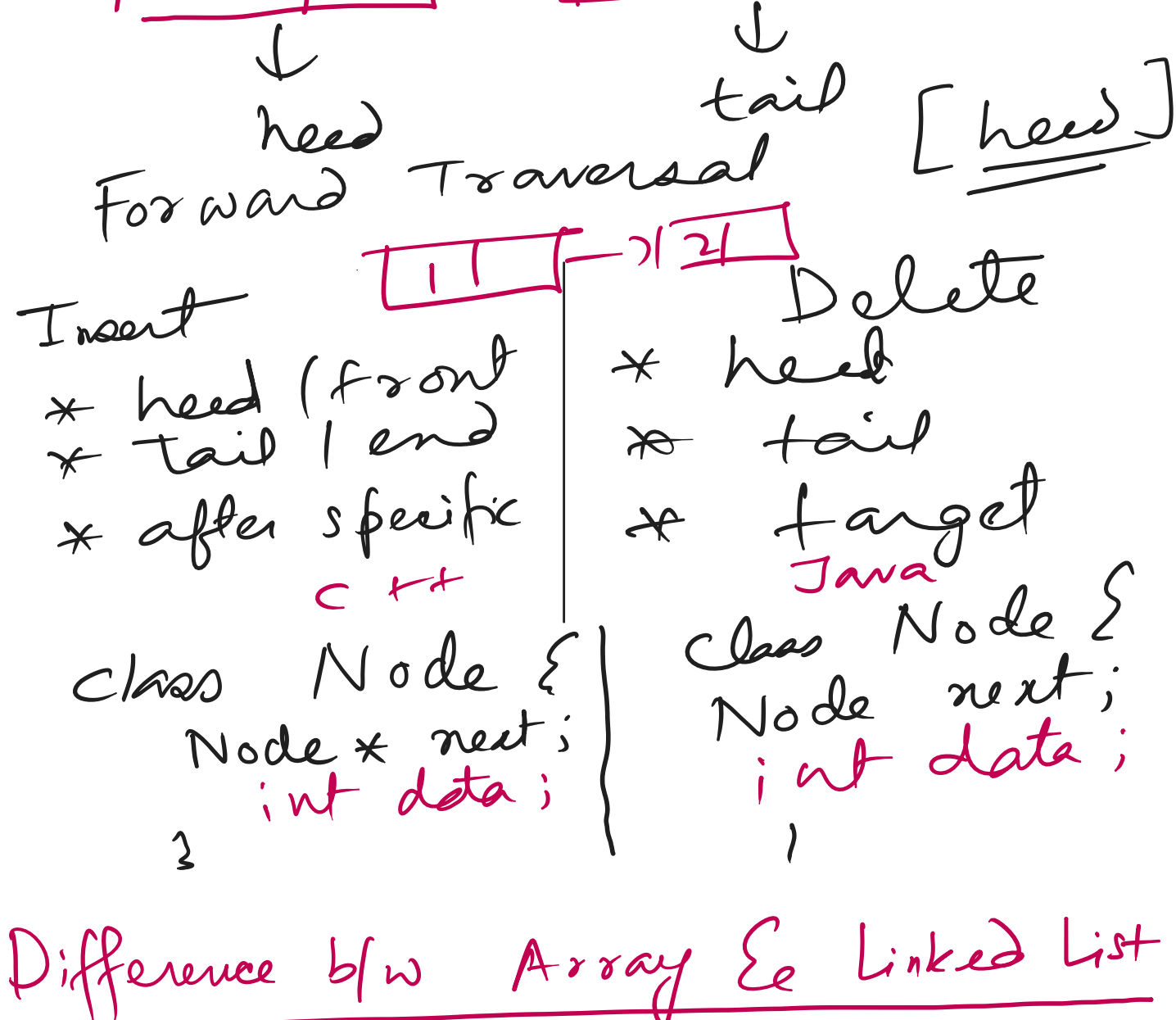
Linear Data Structure  $\rightarrow$  Contd...

Linked List  $\rightarrow$

It is a linear data structure which consists of an entity called Node.

Depending on type of node, there are three types of linked lists  $\rightarrow$

- (i) Singly linked lists
- (ii) Doubly linked lists
- (iii) Circular linked lists



Difference b/w Array & Linked List

Search  $O(1)$



5th element arr[4]

Insert  $n$



$O(n)$

Search



3rd node value

$O(n)$

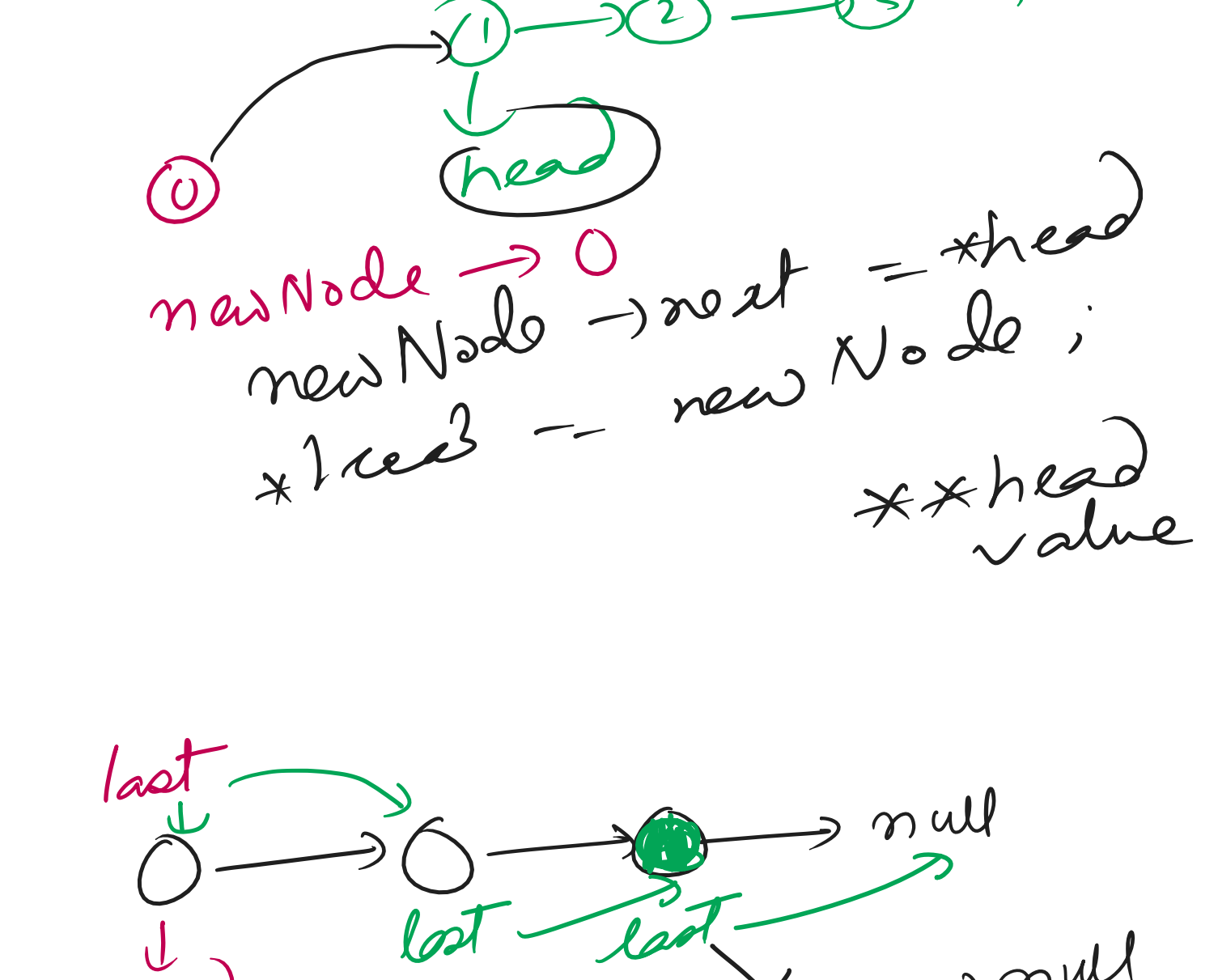
Insert



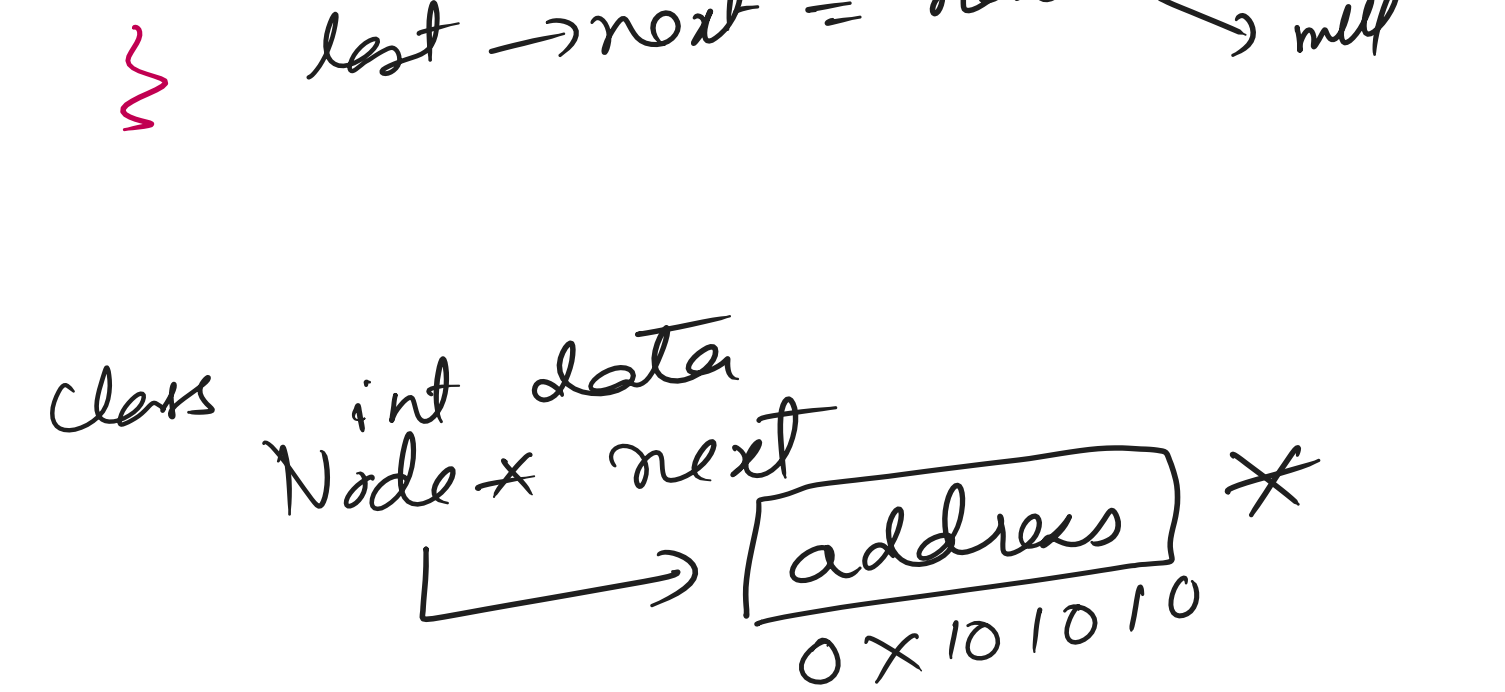
$O(1)$

$a = 10$   $curr \rightarrow data$   
 $curr = curr \rightarrow next$   
 $int * ptr = \&a;$   
 $*ptr;$

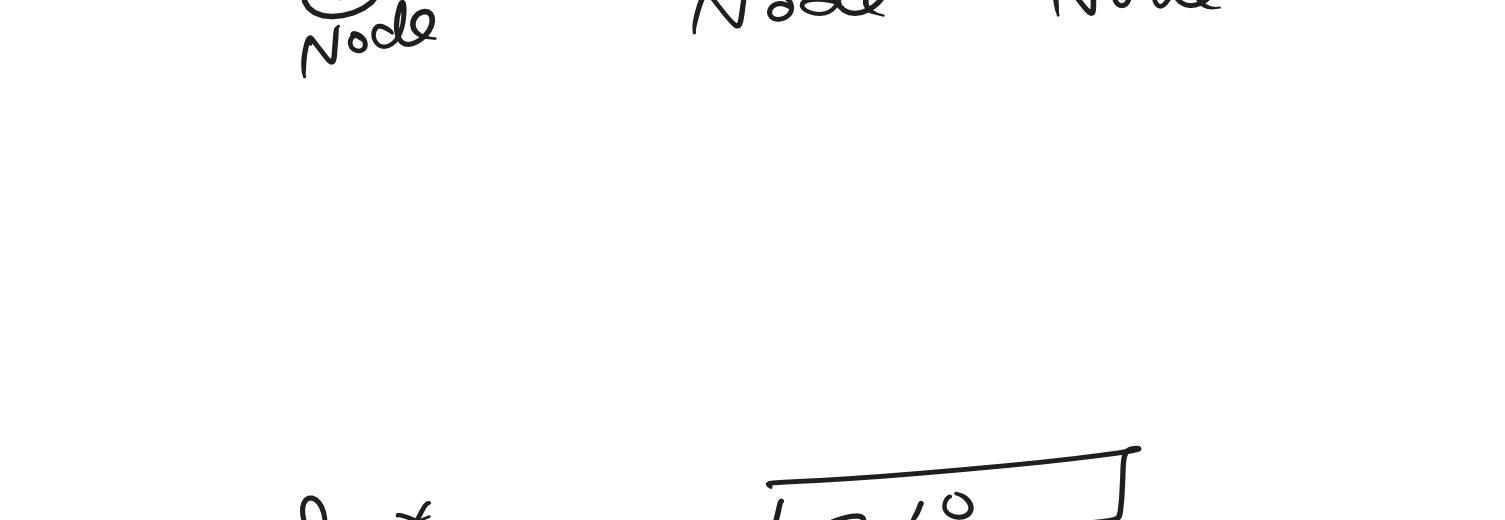
$0 \times x12$   
 $\rightarrow Node * head \rightarrow address / mem$   
 $\rightarrow Node * * head \rightarrow value$



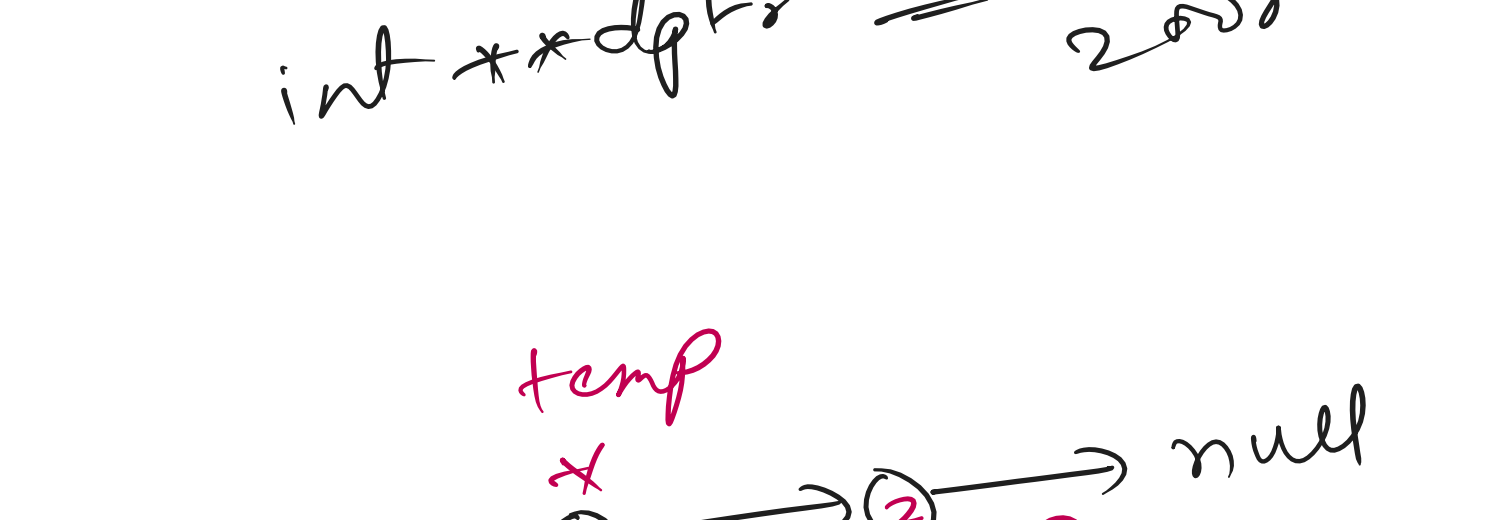
$newNode \rightarrow 0$   
 $newNode \rightarrow next = *head$   
 $*head = newNode$   
 $* * head$   
 $value$



$Node * last = *head;$   
 $while (last \rightarrow next \neq nullptr) \{$   
 $last = last \rightarrow next;$   
 $\}$   
 $last \rightarrow next = newNode;$   
 $newNode \rightarrow null$



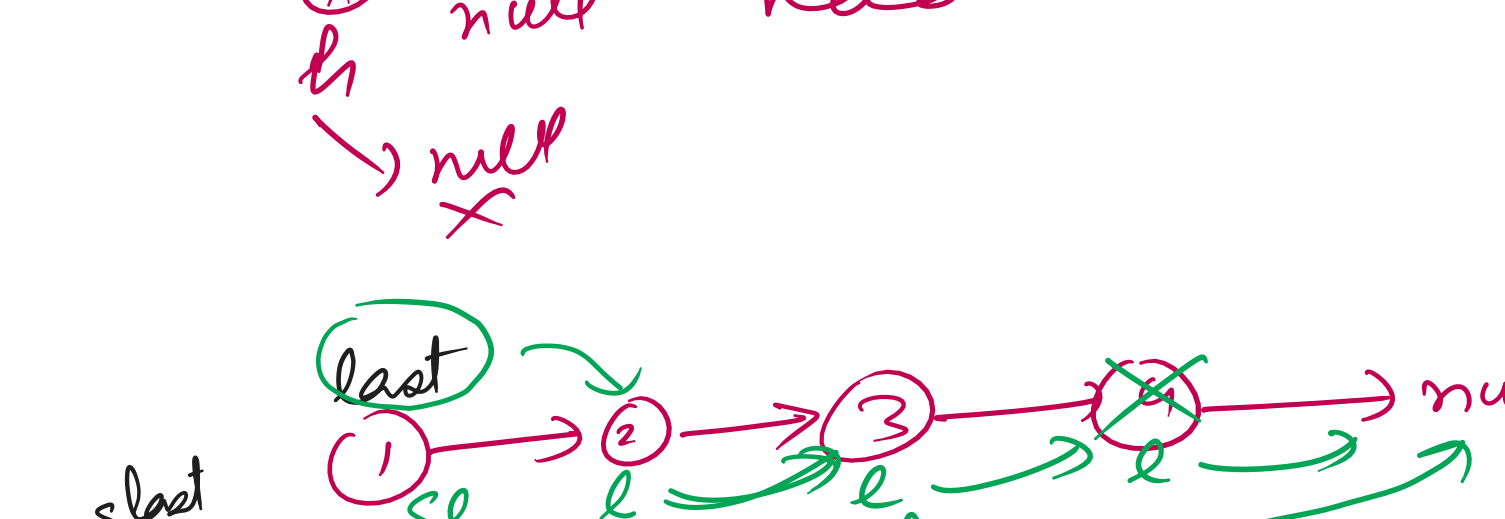
$Node * a = \&10$   
 $\downarrow$   
 $add$   
 $int a = 10$   
 $int * ptr = \&a;$   
 $ptr = 1000$   
 $point(ptr) = 1000$   
 $2000 \&ptr = 2050$   
 $int **dptr = \&ptr$   
 $2050$



$*head = (*head) \rightarrow next$   
 $delete temp;$

Delete End Node  $\rightarrow$

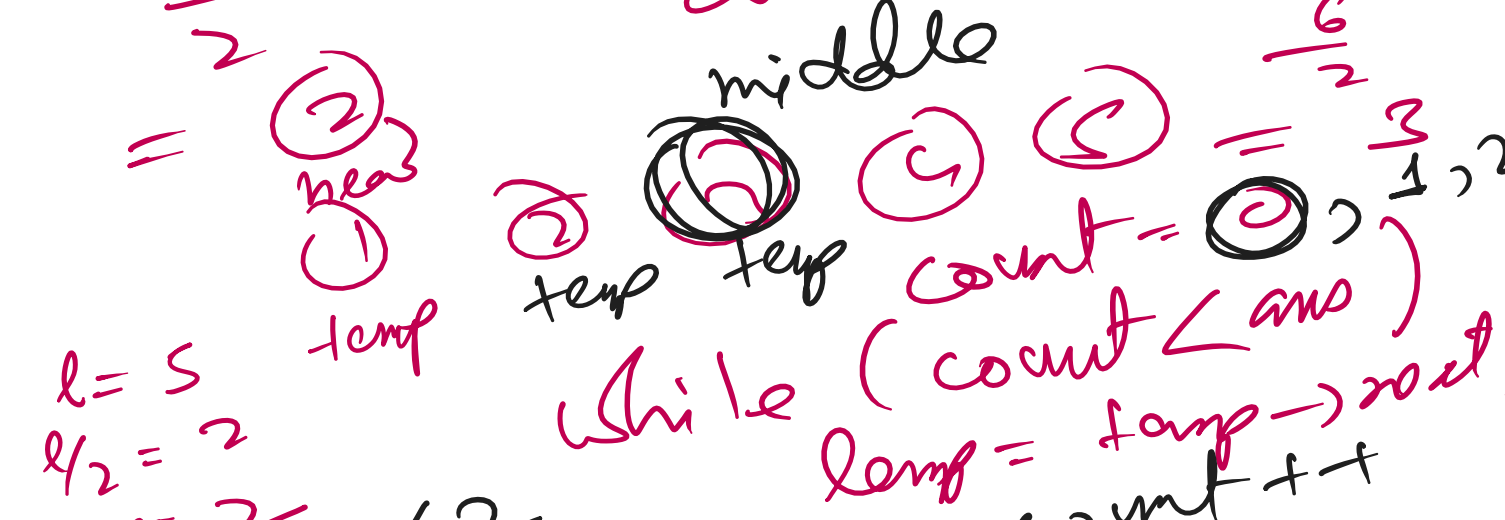
- (i) Empty  $\rightarrow$  not possible
- (ii) Single node  $\rightarrow$   
 $if (head \rightarrow next == null)$



$delete temp;$



$while (last \rightarrow next \neq nullptr) \{$   
 $secondlast = last;$   
 $last = last \rightarrow next;$   
 $\}$   
 $delete last;$   
 $secondlast \rightarrow next = null;$



$length = 0$   
 $count = 0$   
 $while (curr \neq nullptr) \{$   
 $count++;$   
 $curr = curr \rightarrow next;$   
 $\}$   
 $length = count$   
 $middle = \frac{length}{2}$   
 $temp = head$   
 $while (count < middle) \{$   
 $temp = temp \rightarrow next;$   
 $count++;$   
 $\}$   
 $delete temp;$

Feedback  $\rightarrow$   
[bigfictraining.com](http://bigfictraining.com)

Session code  $\rightarrow$  10920