

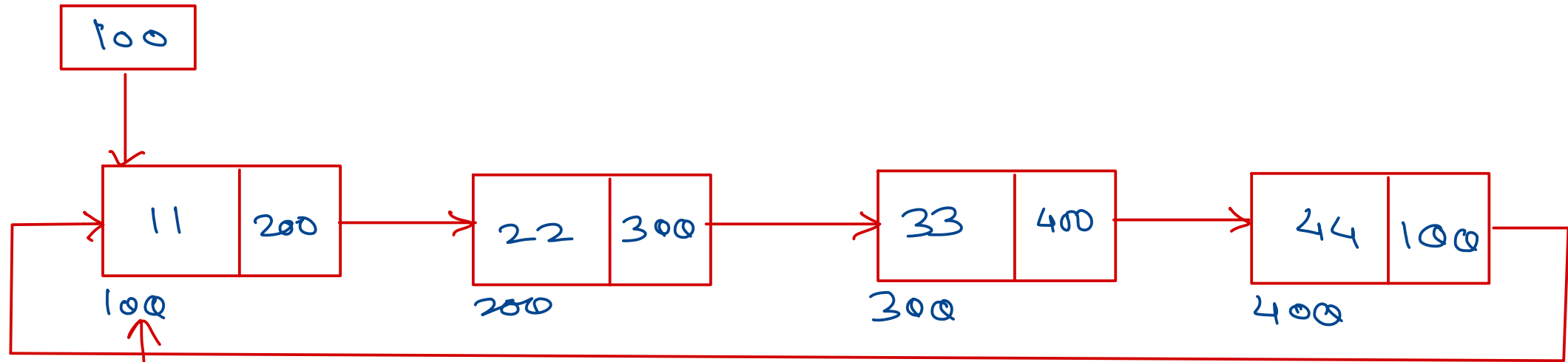


Data Structure & Algorithms

Nilesh Ghule



Singly Circular Linked List - display C?



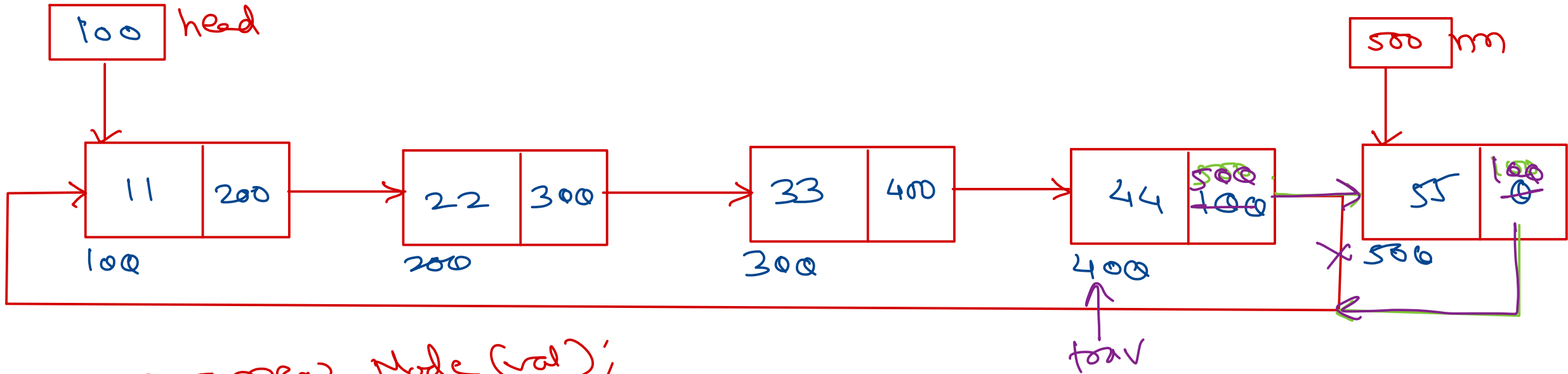
```
trav
if (head != null) {
    trav = head;
    do {
        print (trav.data);
        trav = trav.next;
    } while (trav != head);
}
```

11 22 33 44

head
Q

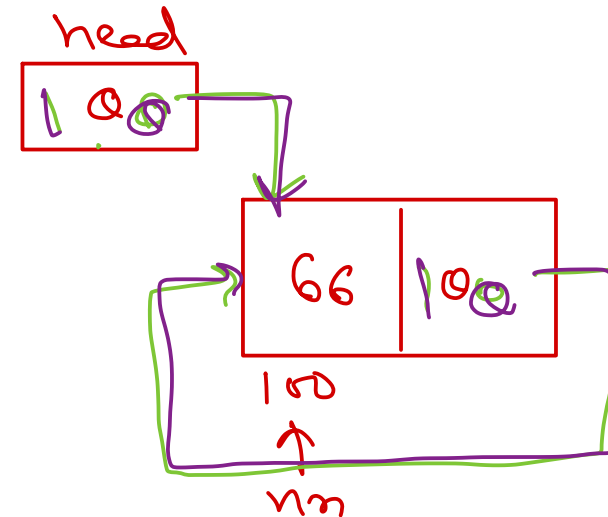
3

Singly Circular Linked List - addLast()



```
nm = new Node(val);  
trav = head;  
while (trav.next != head)  
    trav = trav.next;
```

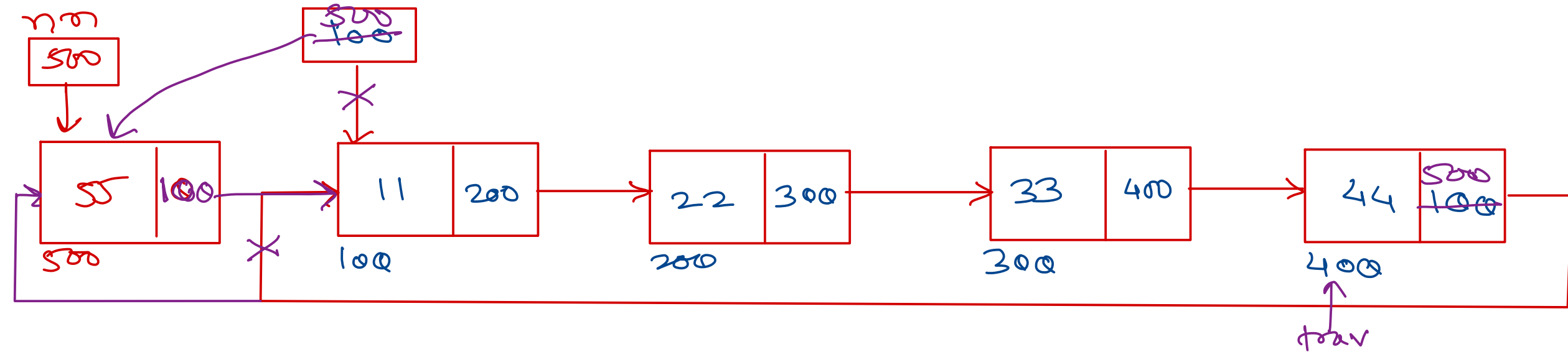
```
nm.next = head;  
trav.next = nm;
```



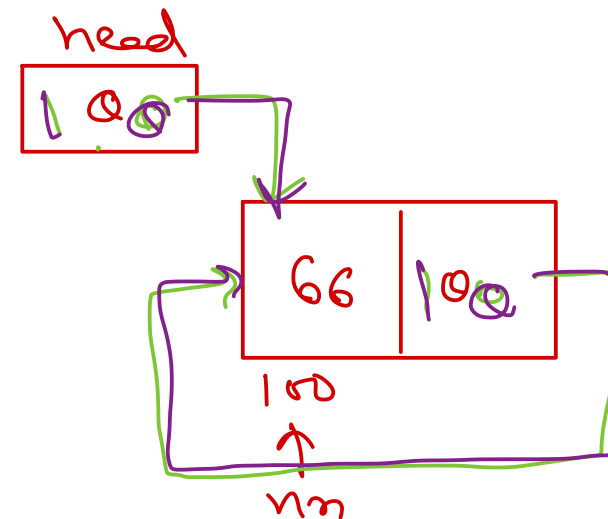
```
if (head == null)  
{  
    head = nm;  
    nm.next = head;  
}
```



Singly Circular Linked List - add First ()



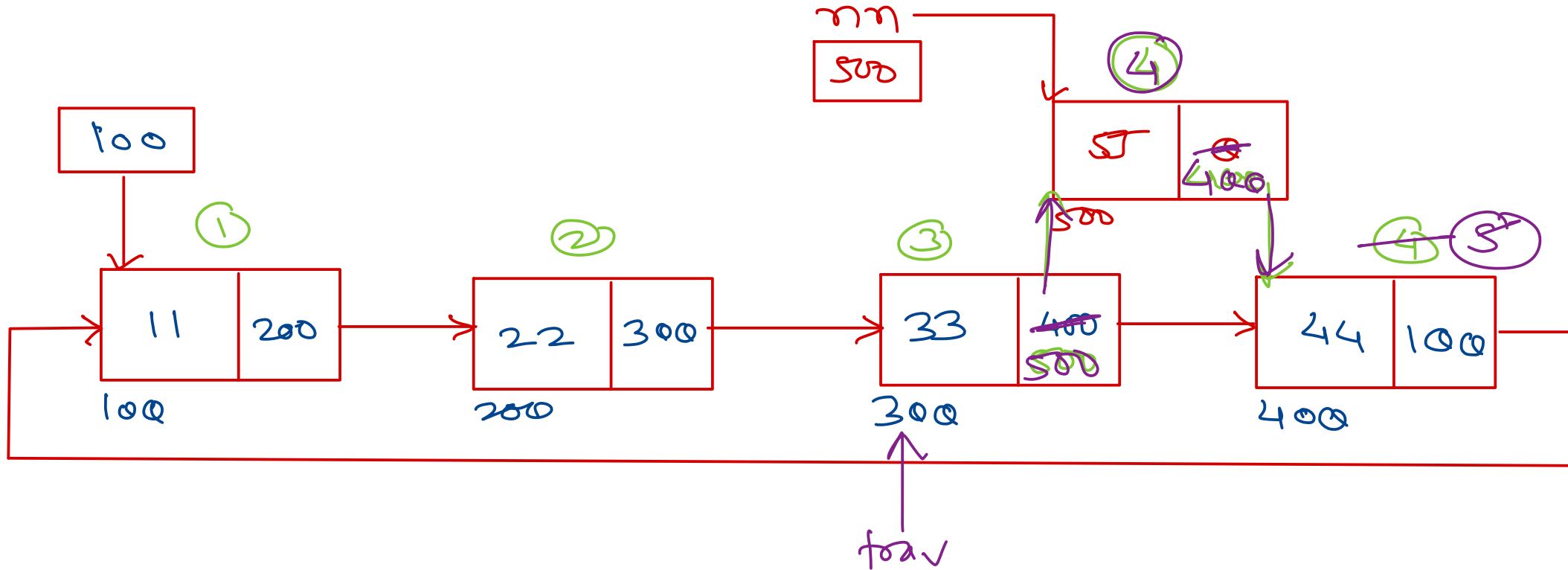
```
✓ nm = new Node(val);  
✓ trav = head;  
✓ while( trav.next != head )  
    trav = trav.next;  
✓ nm.next = head;  
✓ trav.next = nm;  
head = nm;
```



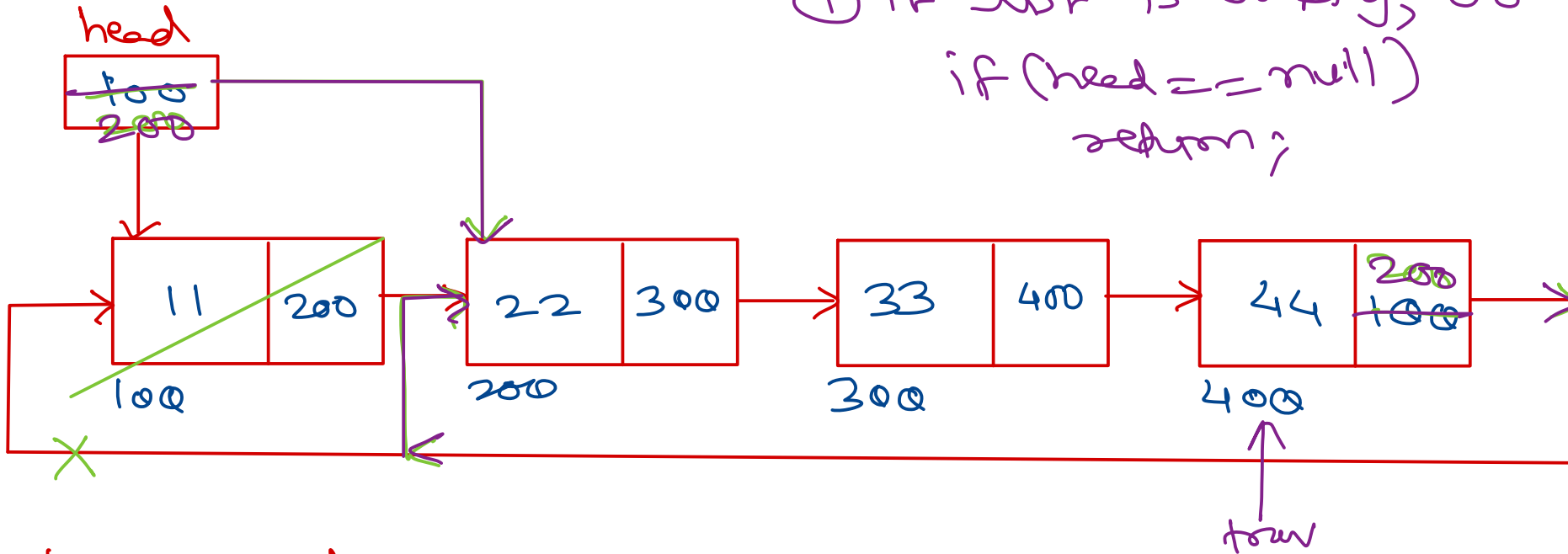
```
if (head == null)  
{  
    head = nm;  
    nm.next = head;  
}
```



Singly Circular Linked List - addAtPos()



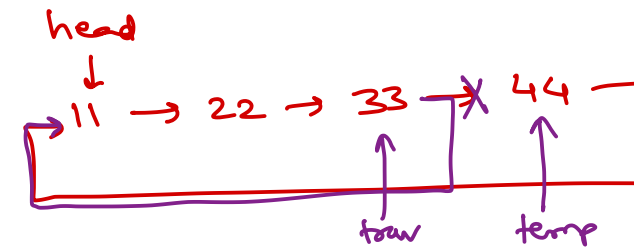
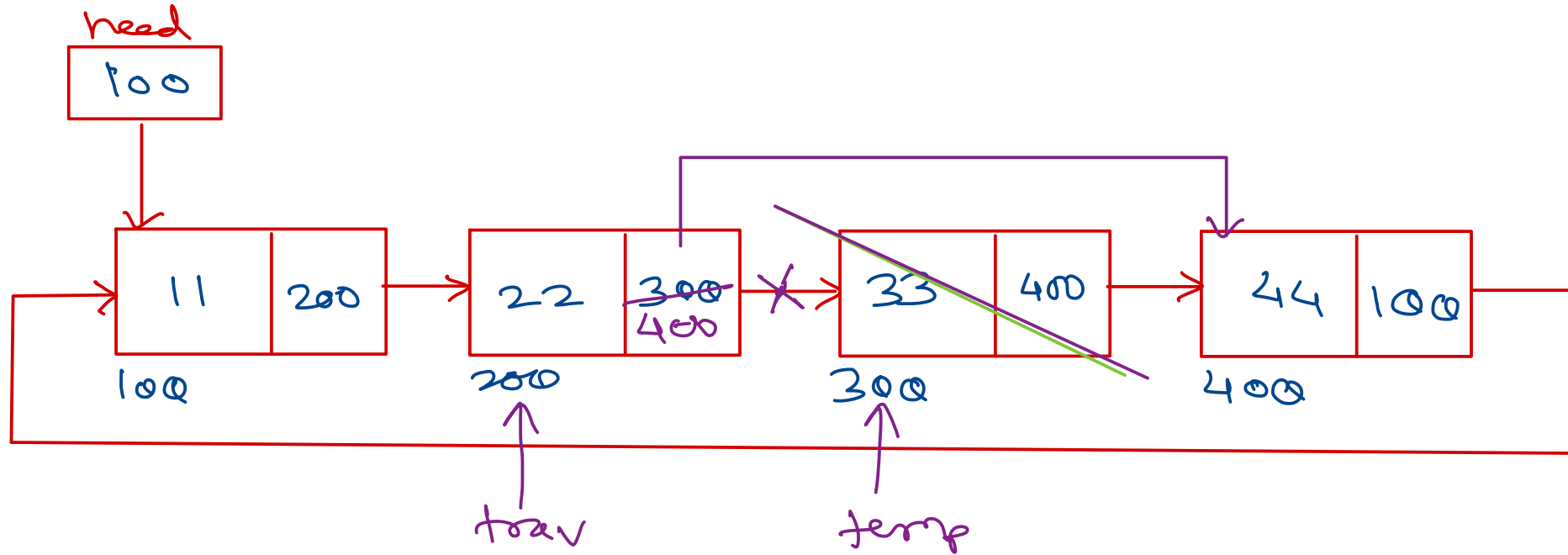
Singly Circular Linked List - `delFirst()`



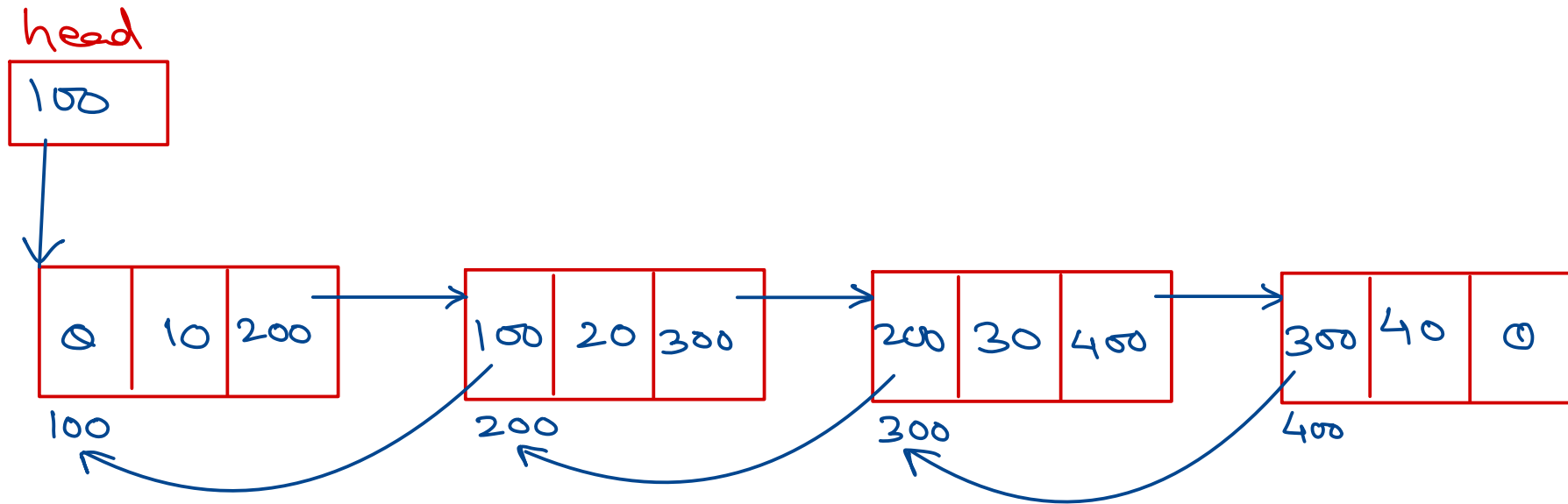
```
trav = head;
while (trav.next != head)
    trav = trav.next;
head = head.next;
trav.next = head;
```

② if list has ^{only} single node, delete it.
if (head.next == head)
 head = null;

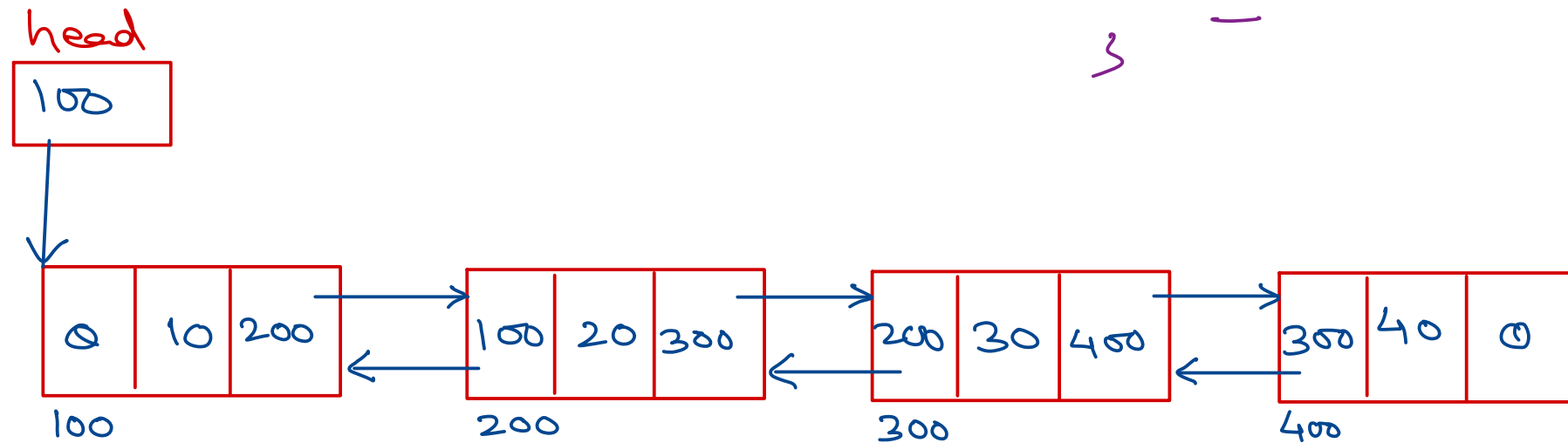
Singly Circular Linked List - del At PosC?



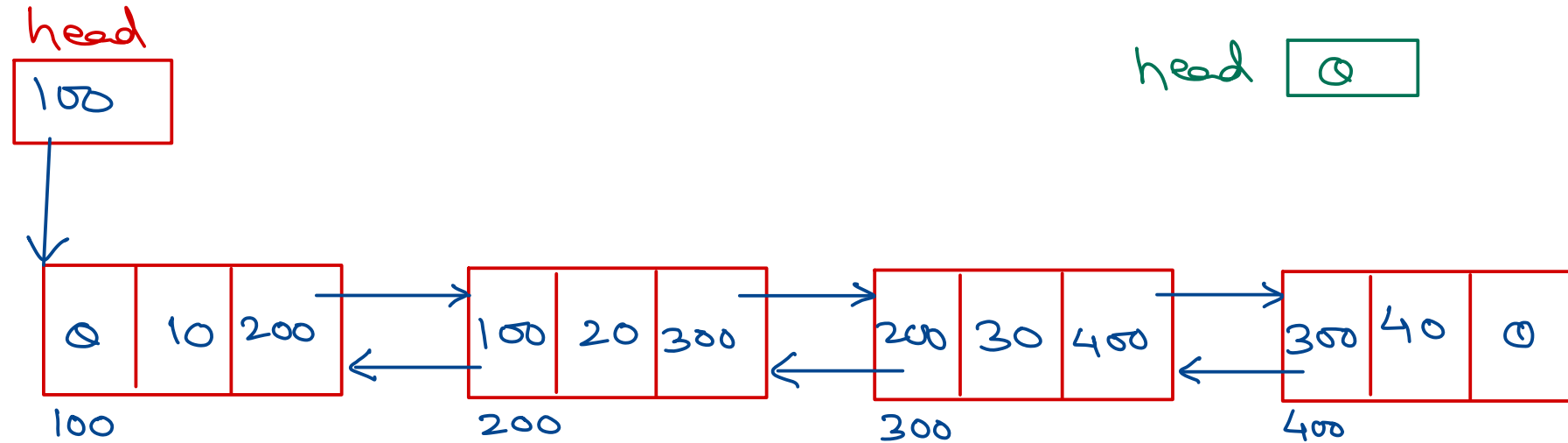
Doubly Linear Linked List



```
class Node {  
    int data;  
    Node next;  
    Node prev;  
}
```



Doubly Linear Linked List - display Fwd(), display Rev()



head 0

↑
trav

itr = n
 $T \propto n - O(n)$
 trav = head;
 while (trav != null) {
 print(trav.data);
 trav = trav.next;
 }

if (head != null) {

trav = head;
 while (trav.next != null) {
 trav = trav.next;

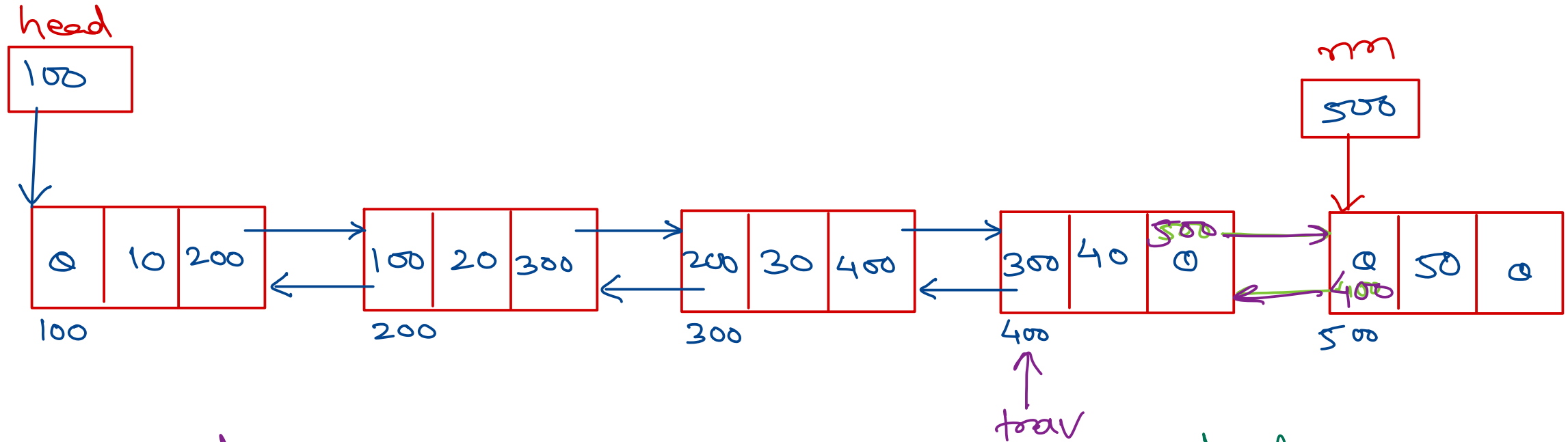
while (trav != null) {
 print(trav.data);
 trav = trav.prev;

itr = n + n
 $T \propto 2n - O(n)$

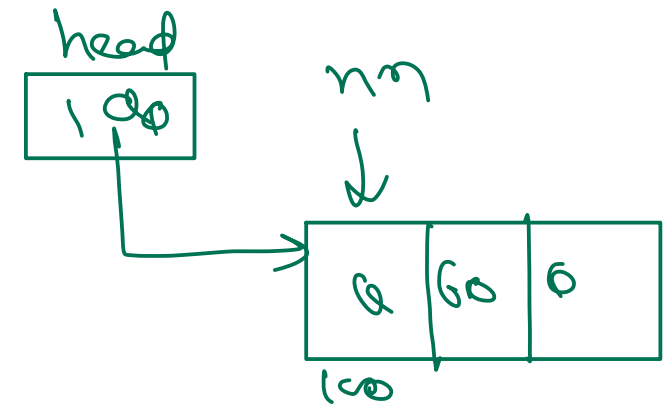
40, 30, 20, 10

}

Doubly Linear Linked List - add last (?)



```
trav = head;  
while (trav.next != null)  
    trav = trav.next;  
trav.next = nn;  
nn.prev = trav;
```





Thank you!

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