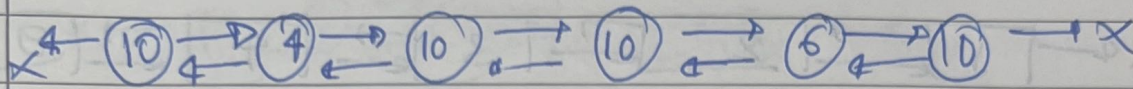
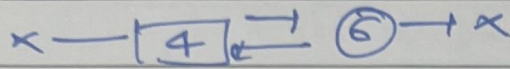


13) Delete all occurrences of a key in DLL



key = 10

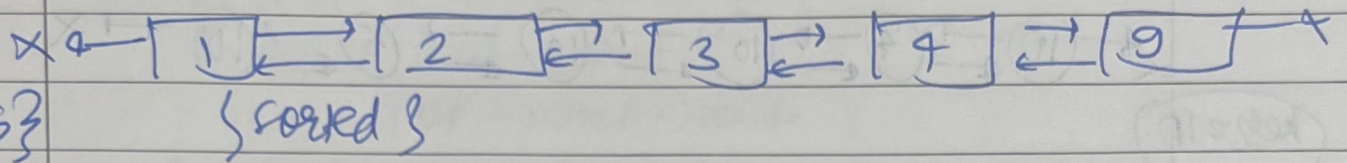


```

Node * temp = head;
while (temp) {
    if (temp->data == key) {
        if (temp == head) {
            head = temp->next;
        }
        Node * nextNode = temp->next;
        Node * prevNode = temp->prev;
        if (nextNode) {
            nextNode->prev = prevNode;
        }
        if (prevNode) {
            prevNode->next = nextNode;
        }
        free(temp);
        temp = nextNode;
    }
    else {
        temp = temp->next;
    }
}
return head;
TC -> O(N)
SC -> O(1)
  
```



⑭ { find all Pairs depth sum in DLL }



```

vector < Pair < int, int > > allPairs (head, sum) {
    ans vector < > answer;
    if (!head || !head->next) return answer;
    Node* temp1 = head;
    while (temp1) {
        if (temp1->data > sum) break;
        Node* temp2 = temp1->next;
        while (temp2) {
            int add = temp1->data + temp2->data;
            if (add == sum)
                answer.push_back({temp1->data, temp2->data});
            else if (add > sum) break;
            temp2 = temp2->next;
        }
        temp1 = temp1->next;
    }
    return answer;
}

```

TC

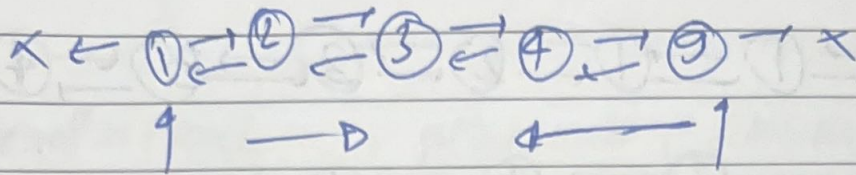
$O(N^2)$

SC

$O(1)$



Optimal :- 5 two pointers?



vector <int> ans; optimal (head, sum) {  
if (head == NULL) return;

Node \* tail = head;

while (tail->next) tail = tail->next; } O(N)

while (head->data < tail->data) {

int add = head->data + tail->data;

if (add == sum) {

ans.push\_back(add);

}

else if (add > sum) {

tail = tail->next;

}

else {

head = head->next;

}

}

return ans;

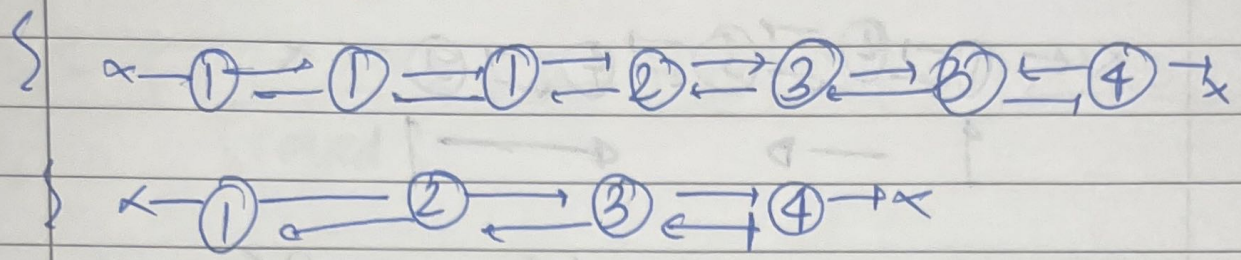
}

T.C  $\rightarrow O(N) + O(N)$

S.C  $\rightarrow O(1)$



⑮ { Remove duplicate from sorted DL23



Node\* temp = head;

while(temp and temp->next) {

Node\* nextNode = temp->next;

while(nextNode && nextNode->data == temp->data)

{ Node\* duplicate = nextNode;

nextNode = nextNode->next;

free(duplicate);

}

temp->next = nextNode;

if (nextNode) nextNode->prev = temp;

temp = temp->next;

}

return head;

TC  $\rightarrow O(N)$

SC  $\rightarrow O(1)$