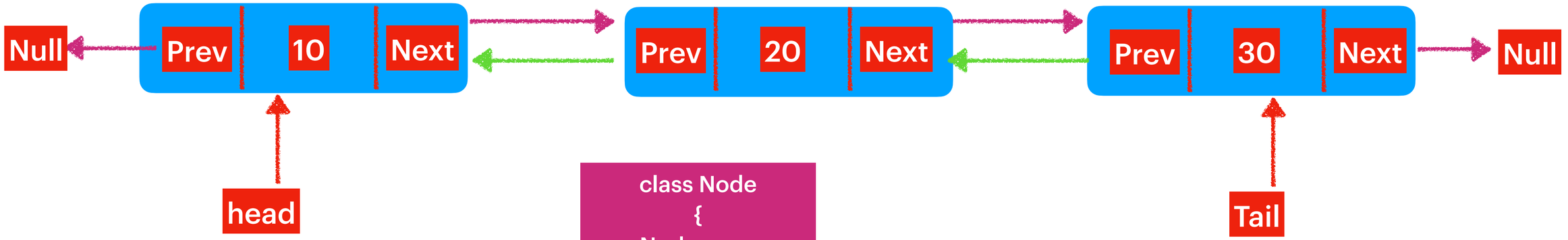
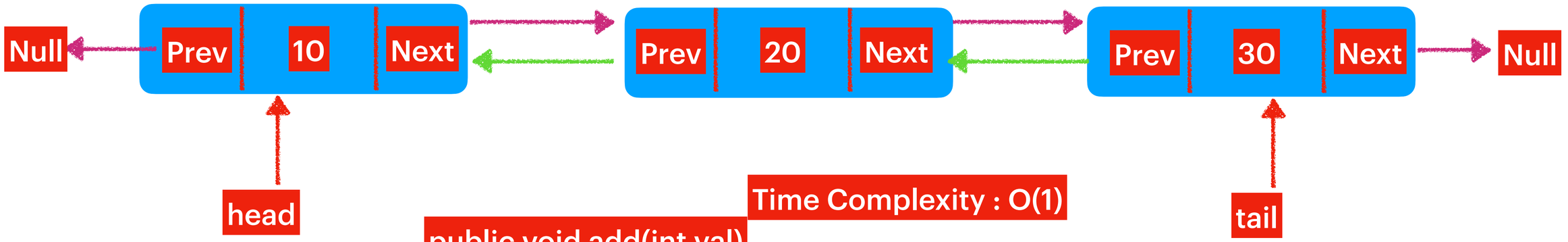
Design Double Linked List:




```
class Node
{
Node prev,
Node next,
int val;
Public Node(int data)
{
val = data;
prev = null;
next = null
}
}
```

Design Double Linked List:

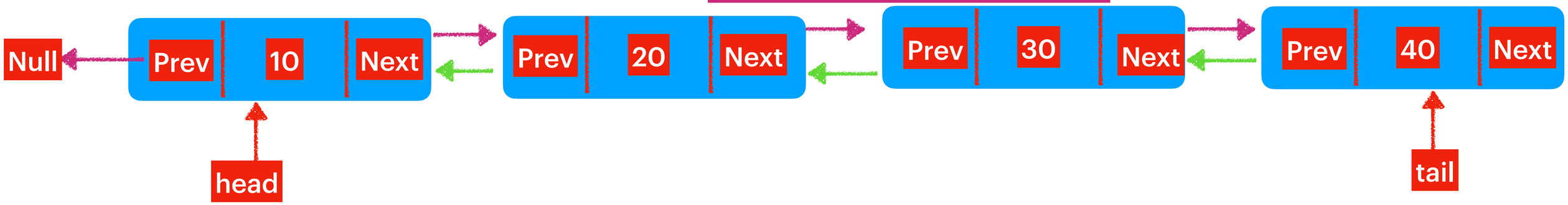
```
class Node
{
Node prev,
Node next,
int val;
Public Node(int data)
{
val = data;
prev = null;
next = null
}
}
```



Time Complexity : O(1)

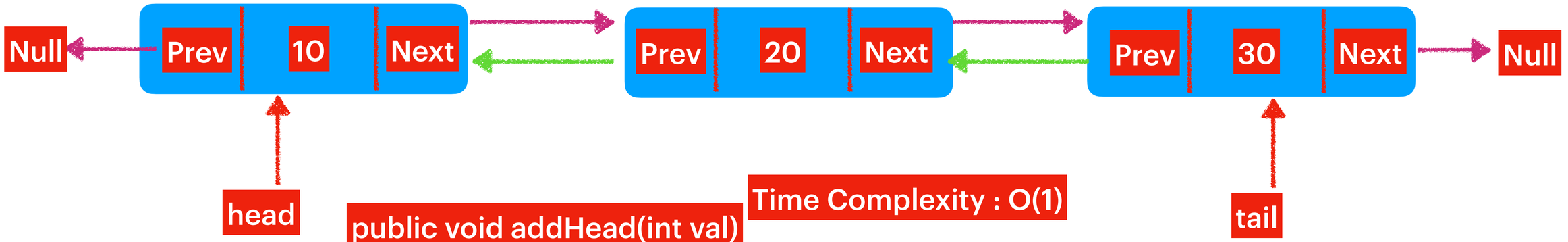
public void add(int val)

```
Sudo Code:
Node current = new Node(40);
tail.next = current;
current.prev = tail;
tail = current;
```



Design Double Linked List:

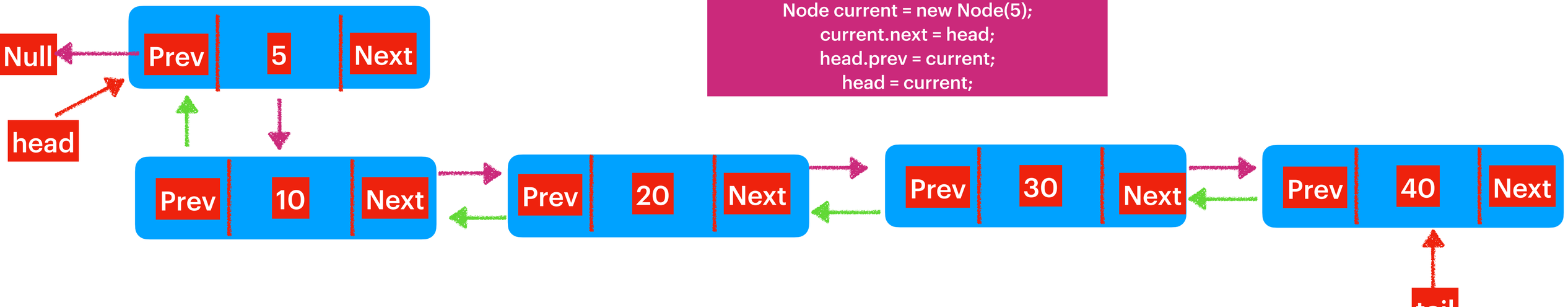
```
class Node
{
Node prev,
Node next,
int val;
Public Node(int data)
{
val = data;
prev = null;
next = null
}
}
```



public void addHead(int val)

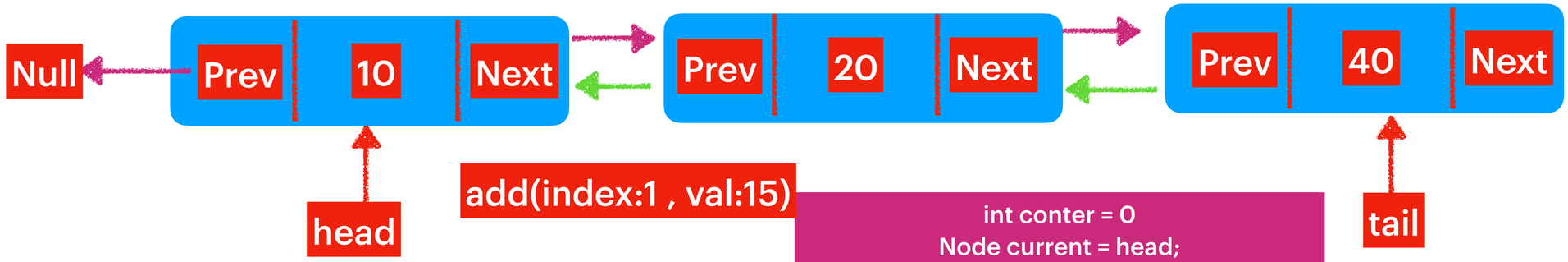
Time Complexity : O(1)

```
Sudo Code:
Node current = new Node(5);
current.next = head;
head.prev = current;
head = current;
```



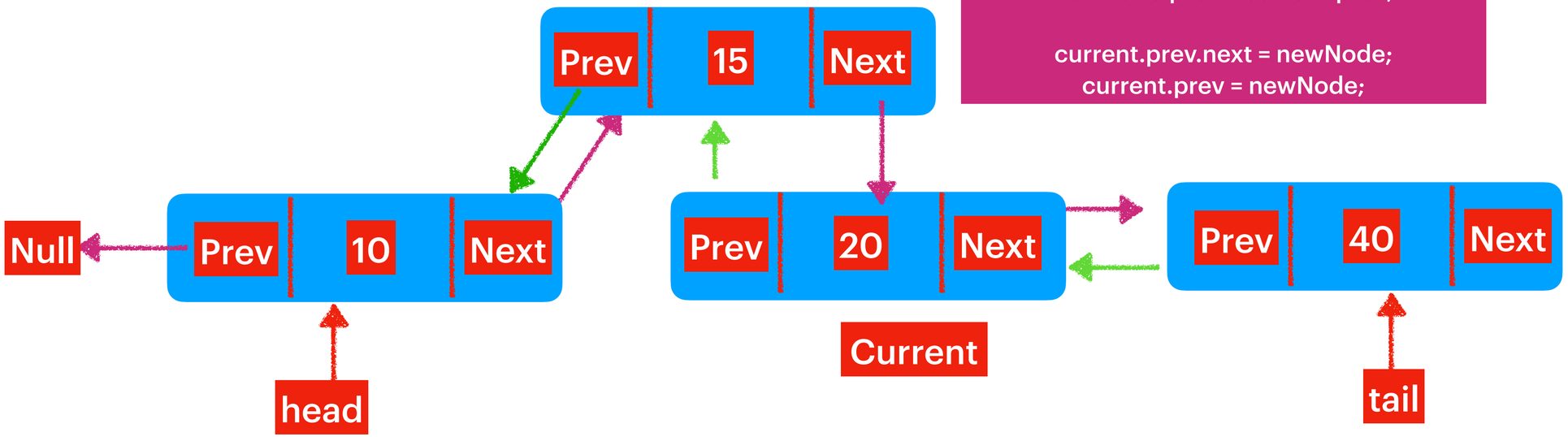
Time Complexity : O(n)

public void add(int index,int val)



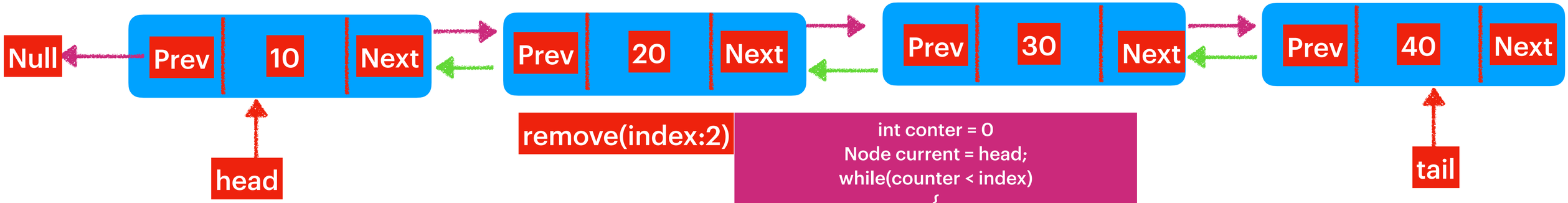
add(index:1 , val:15)

```
int conter = 0
Node current = head;
while(counter < index)
{
current = current.next;
counter++;
}
Node newNode = new Node(30);
newNode.next = current;
newNode.prev = current.prev;

current.prev.next = newNode;
current.prev = newNode;
```



Time Complexity : O(n)

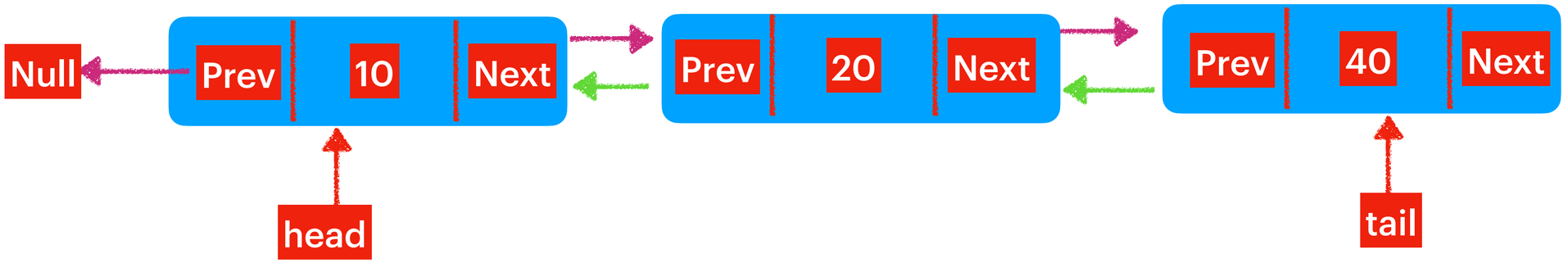
public void remove(int index)



remove(index:2)

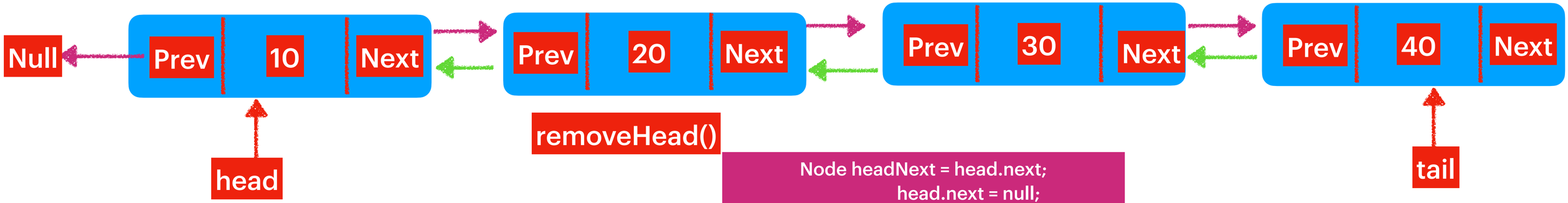
```
int conter = 0
Node current = head;
while(counter < index)
{
current = current.next;
counter++;
}
current.prev.next = current.next;
current.next.prev = current.prev;

current.prev = null;
current.next = null; // Help GC
```

This object will be remove as Part of GC process.



Time Complexity : O(1)

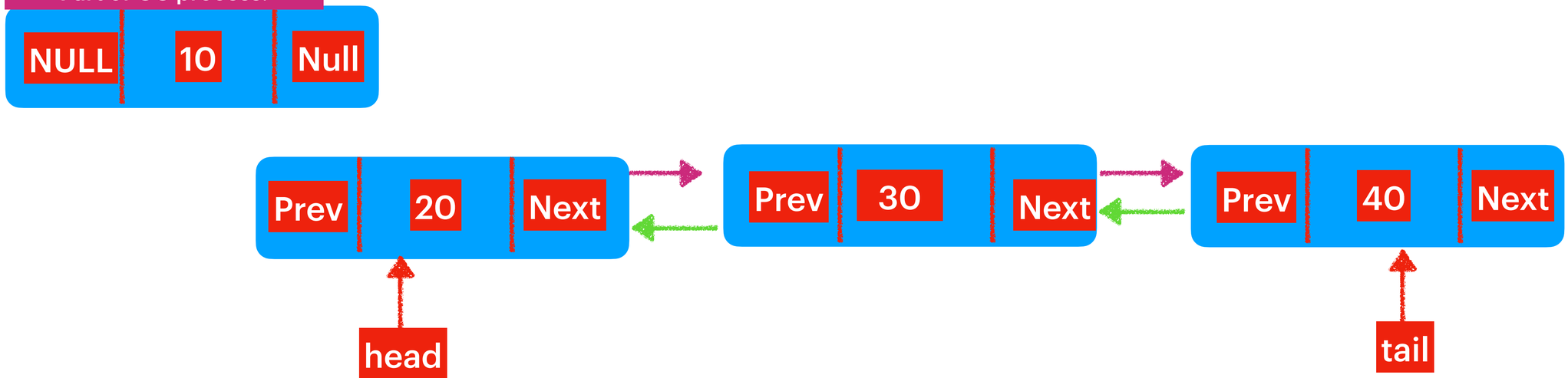
public void removeHead()



removeHead()

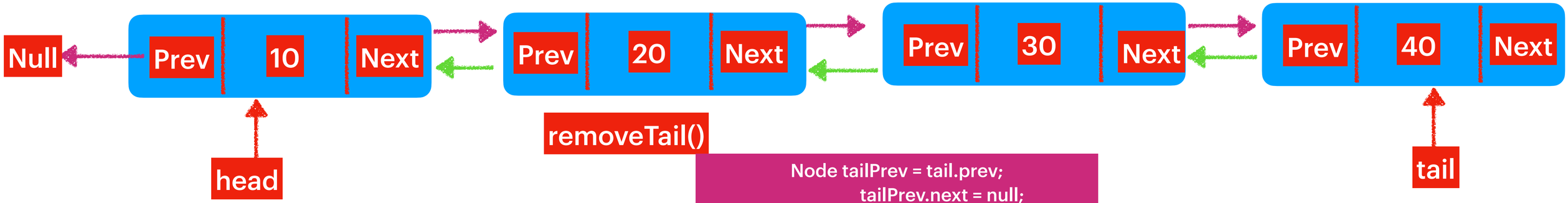
```
Node headNext = head.next;
head.next = null;
headNext.prev = null;
head = headNext;
```

This object will be remove as Part of GC process.



Time Complexity : O(1)

public void removeTail()



removeTail()

```
Node tailPrev = tail.prev;
tailPrev.next = null;
tail.prev = null;
tail = tailPrev;
```

This object will be remove as Part of GC process.