
# DATA STRUCTURES AND ITS APPLICATIONS

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## Doubly Linked List

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## Deleting a node

There are 3 cases

- Deleting first node
- Deleting last node
- Deleting a node at a given position

## Deleting a node

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- Deleting first node
- Deleting last node
- Deleting a node at a given position

## Deleting first node

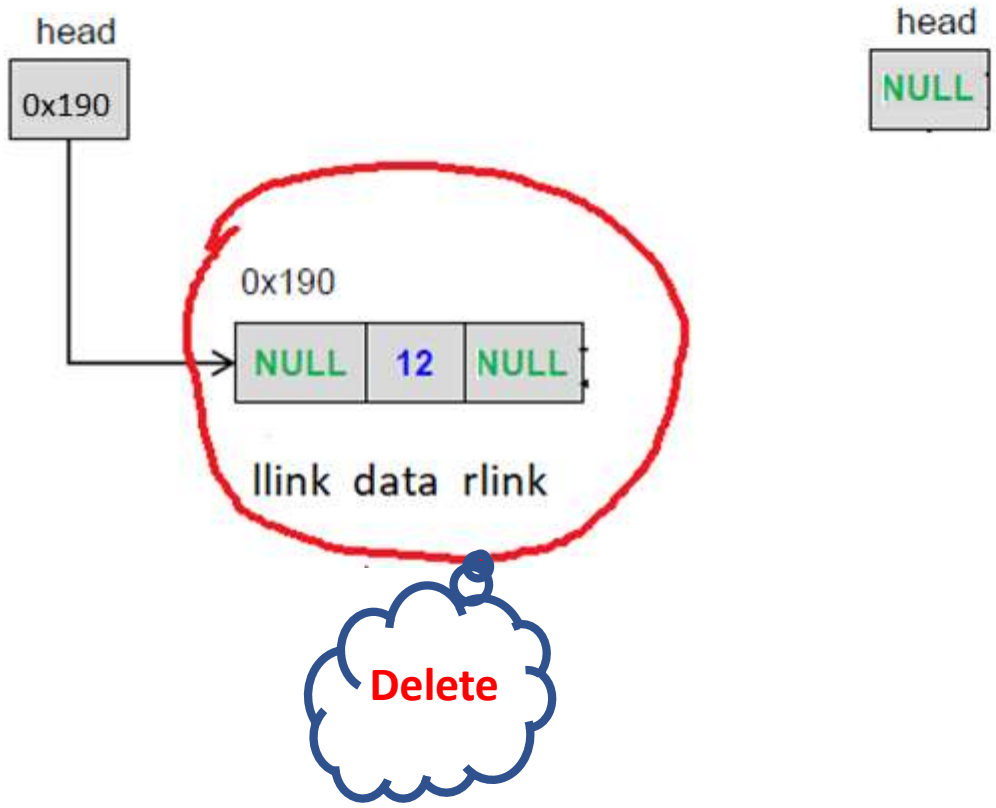
## What will change??

- Case I : Empty Linked List
- Case II : Linked list with a single node
  first node gets freed up
  head points to NULL
- Case III : Linked List with more than one node
  Second node llink gets changed to NULL
  first node gets freed off

# Doubly Linked List Operations

## Deleting first node

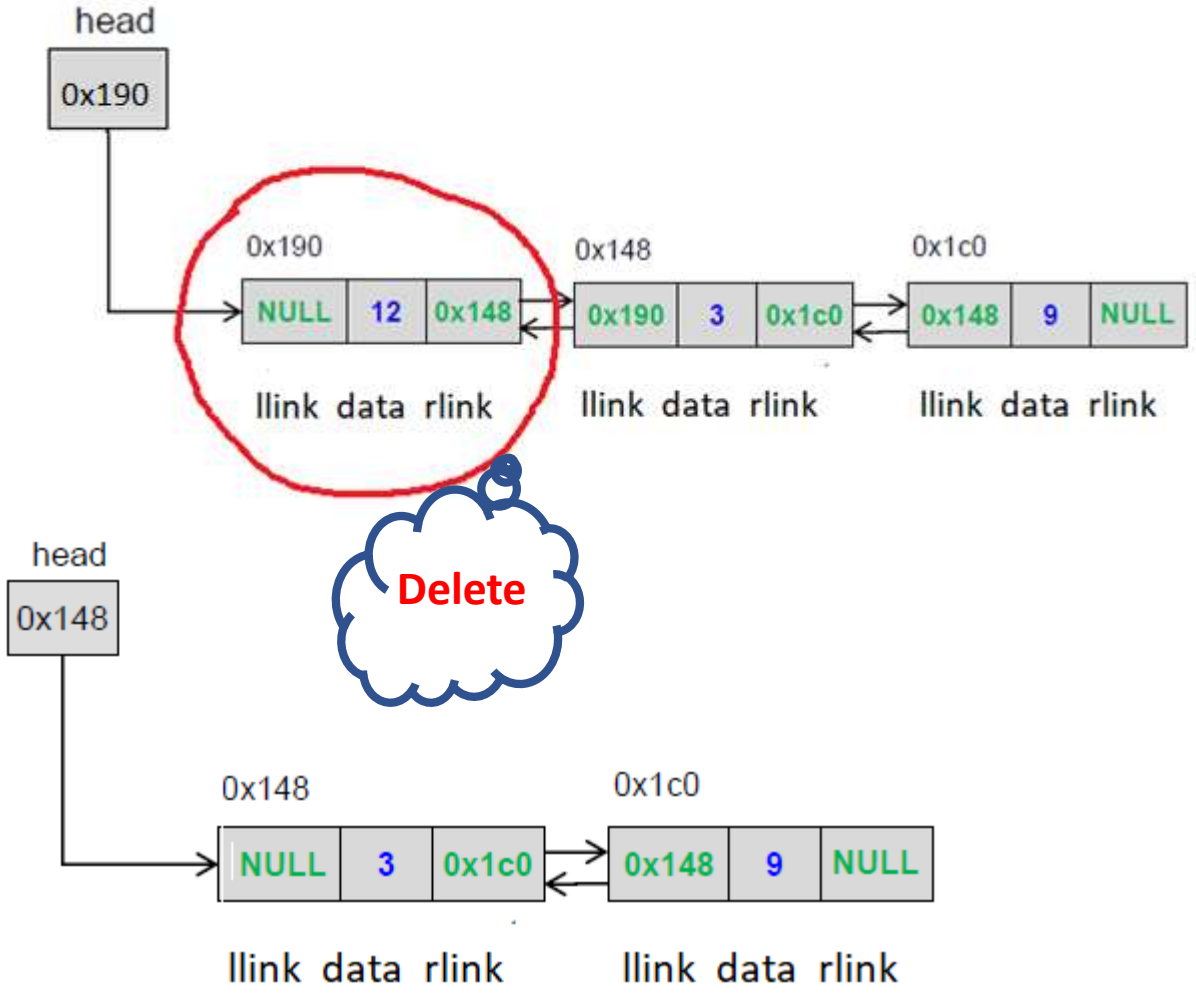
- Case II : Linked list with a single node



# Doubly Linked List Implementation

## Deleting first node

- Case III : Linked List with more than one node



## Deleting last node

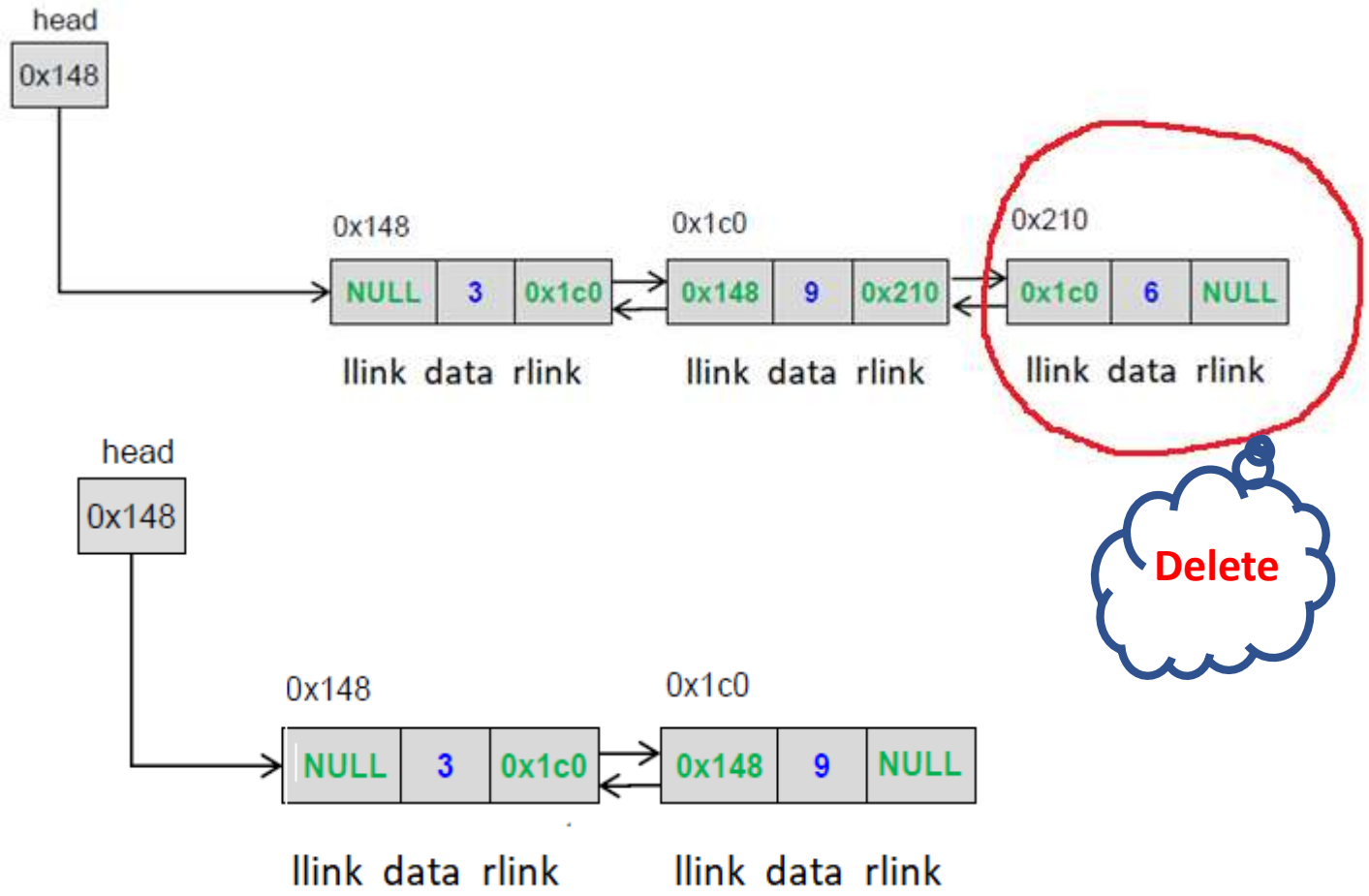
## What will change??

- Case I : Empty Linked List
- Case II : Linked list with a single node
  first node gets freed up
  head points to NULL
- Case III : Linked List with more than one node
  Second last node rlink point to NULL
  last node gets freed up

# Doubly Linked List Implementation

## Deleting last node

- Case II : Linked List with more than one node



## Deleting a node at intermediate position

- Traverse list to find the desired position, keep track of the previous node

If position is found

If position is 1

- Delete from front

else

If it is last position

- Delete from end

else

if intermediate position

- Change previous node rlink to rlink of current node
- Change llink of node following current node to previous node
- Delete current node

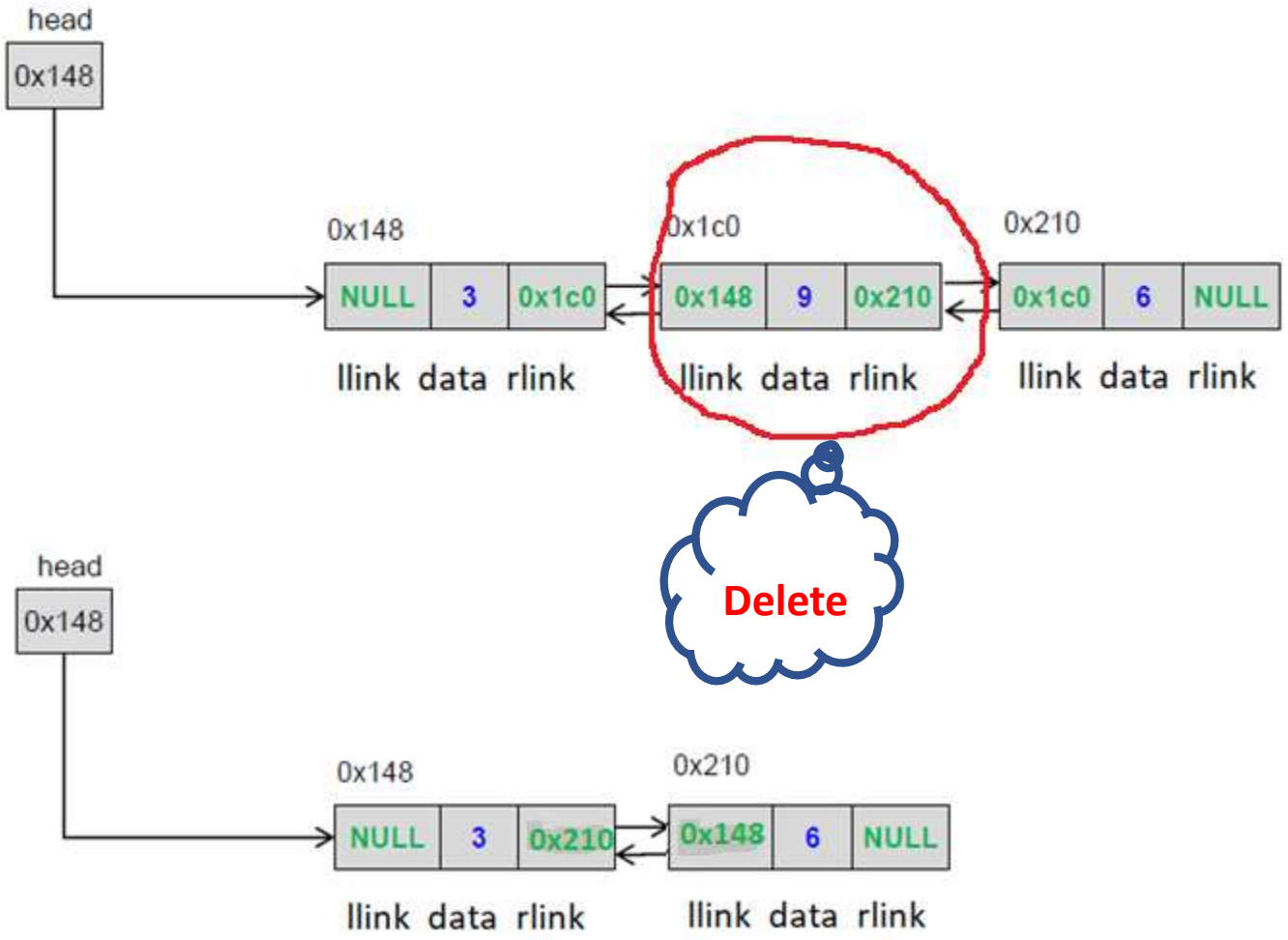
else

invalid position

# Doubly Linked List Operations

## Deleting a node at intermediate position

- Case II : Linked List with more than one node



## Doubly Linked List insert operation

Apply the concepts to implement following operations for a Doubly linked list

- reverse a doubly linked list
- Remove duplicate nodes from a doubly linked list
- Delete a node with a given key value from doubly linked list


# THANK YOU

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