DATA STRUCTURES AND ITS APPLICATIONS

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Singly Linked List

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Deleting a node

There   are   3 cases

➢ Deleting first node

➢ Deleting last node

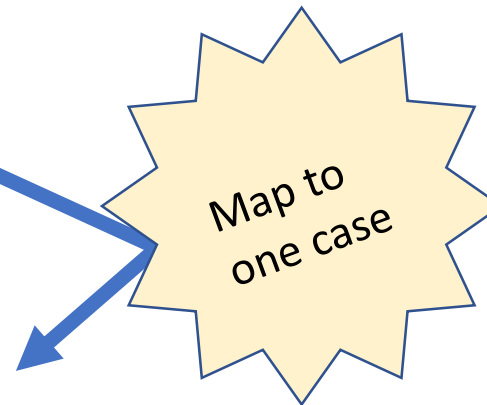➢ Deleting a node at a given position

Deleting first node

Case 1: Linked list is empty

Case 2: Linked list with a single node
  ➢ delete the node
  ➢ set head to NULL

Case3:Linked list has more than one node
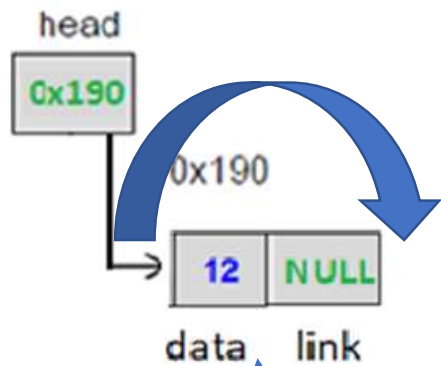 ➢ Change head to point to second node
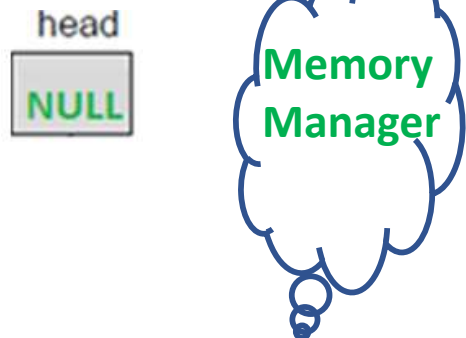 ➢ Delete the first node
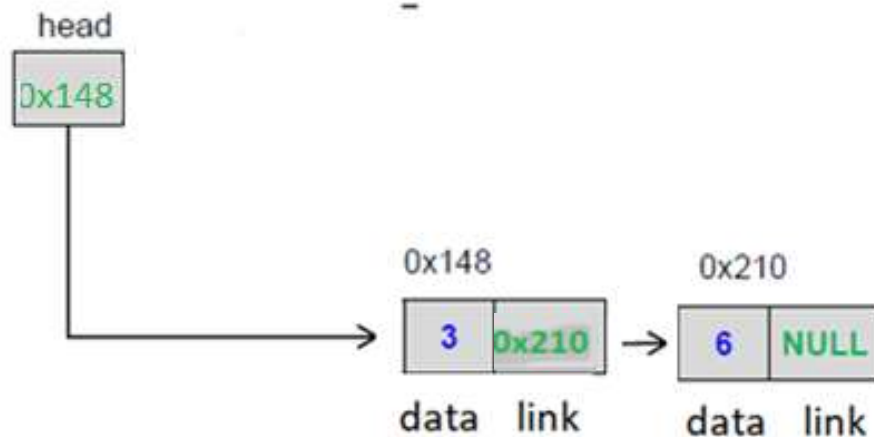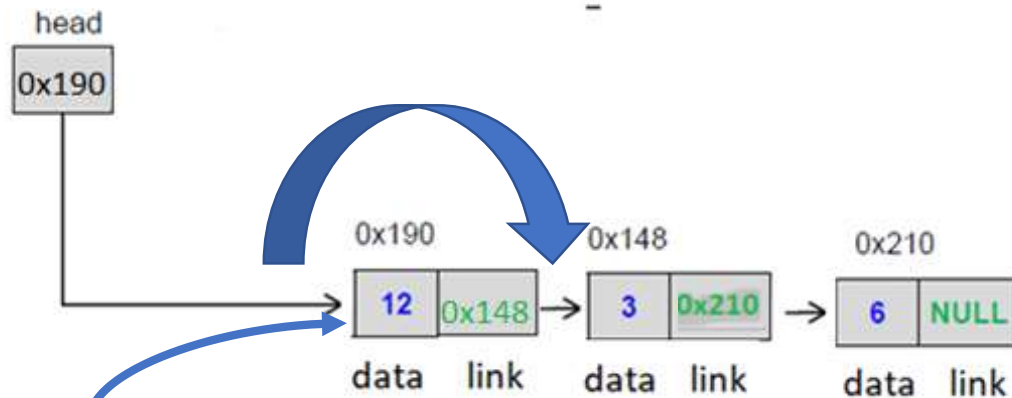
Map to one case

Deleting first node

Only one node in list

More than one node
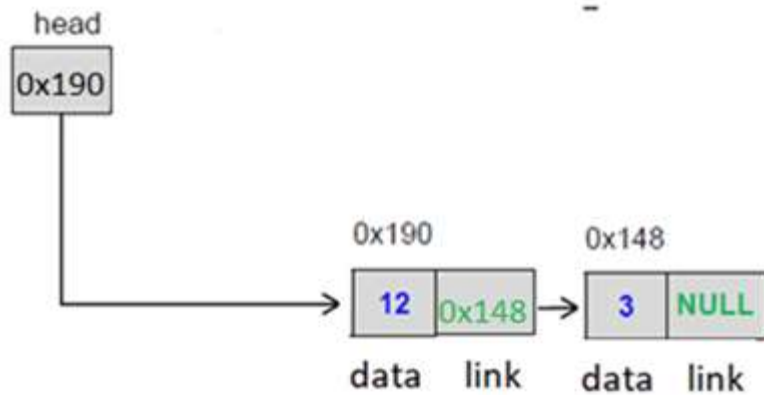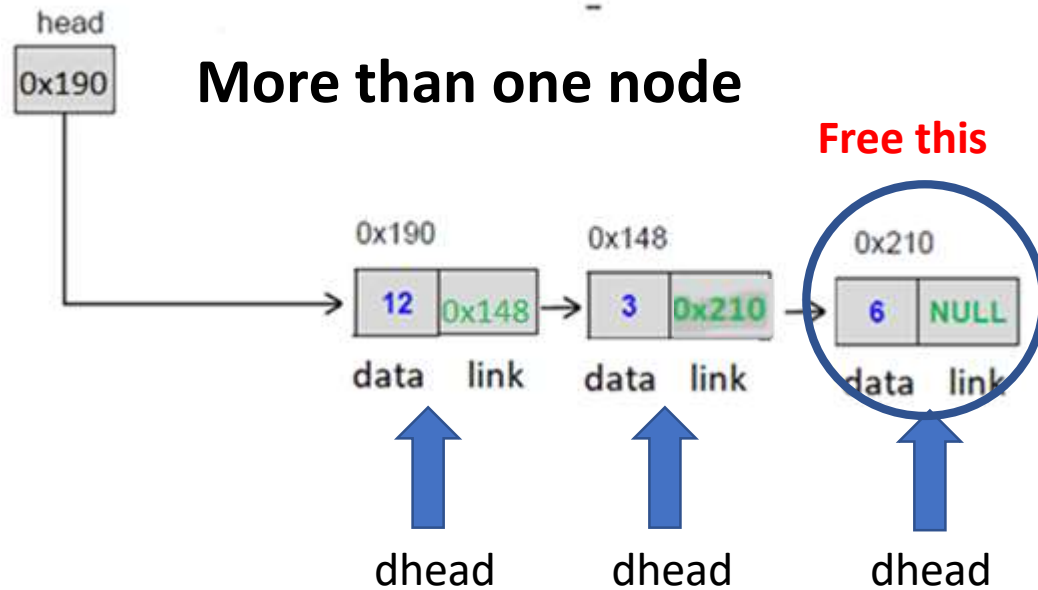
Deleting last node

Case 1: Linked list is empty

Case 2: Linked list with a single node
- ➢ delete the node
- ➢ set head to NULL

Case3:Linked list has more than one node
- ➢ Traverse the linked list to point to second last node
- ➢ Delete the last node
- ➢ Set link field of second last node to NULL

Deleting last node

head
0x190

More than one node

Free this

0x190

12	0x148

data   link

0x148

3	0x210

data   link

0x210

6	NULL

data   link

dhead   dhead   dhead

head
0x190

0x190

12	0x148

data   link

0x148

3	NULL

data   link

Deleting node from a given position

If the linked list is not empty

  If position is 1

     ➤   Delete from the front of the linked list

  Else

    If position is a valid position

         ➤ Traverse linked list to get the desired position

         ➤ keep track of previous node

         ➤ set previous node link field to link field of current node
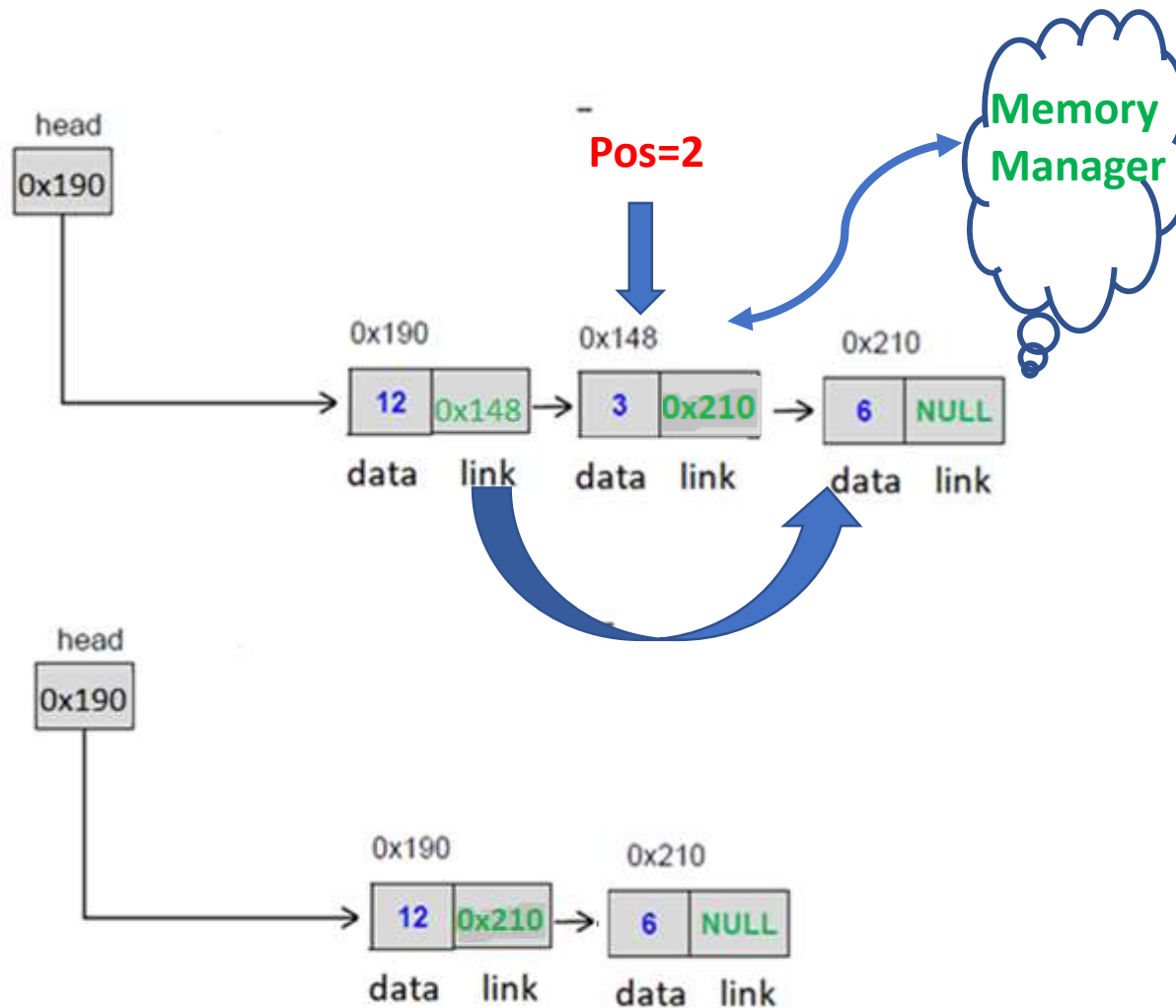
         ➤ delete the current node

     Else

         ➤ print invalid position

Deleting node from a given position

Singly Linked List delete operation

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

➢ Delete a node with given key value
➢ Delete all alternate nodes
➢ Delete all the nodes (erase the linked list)

THANK YOU

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