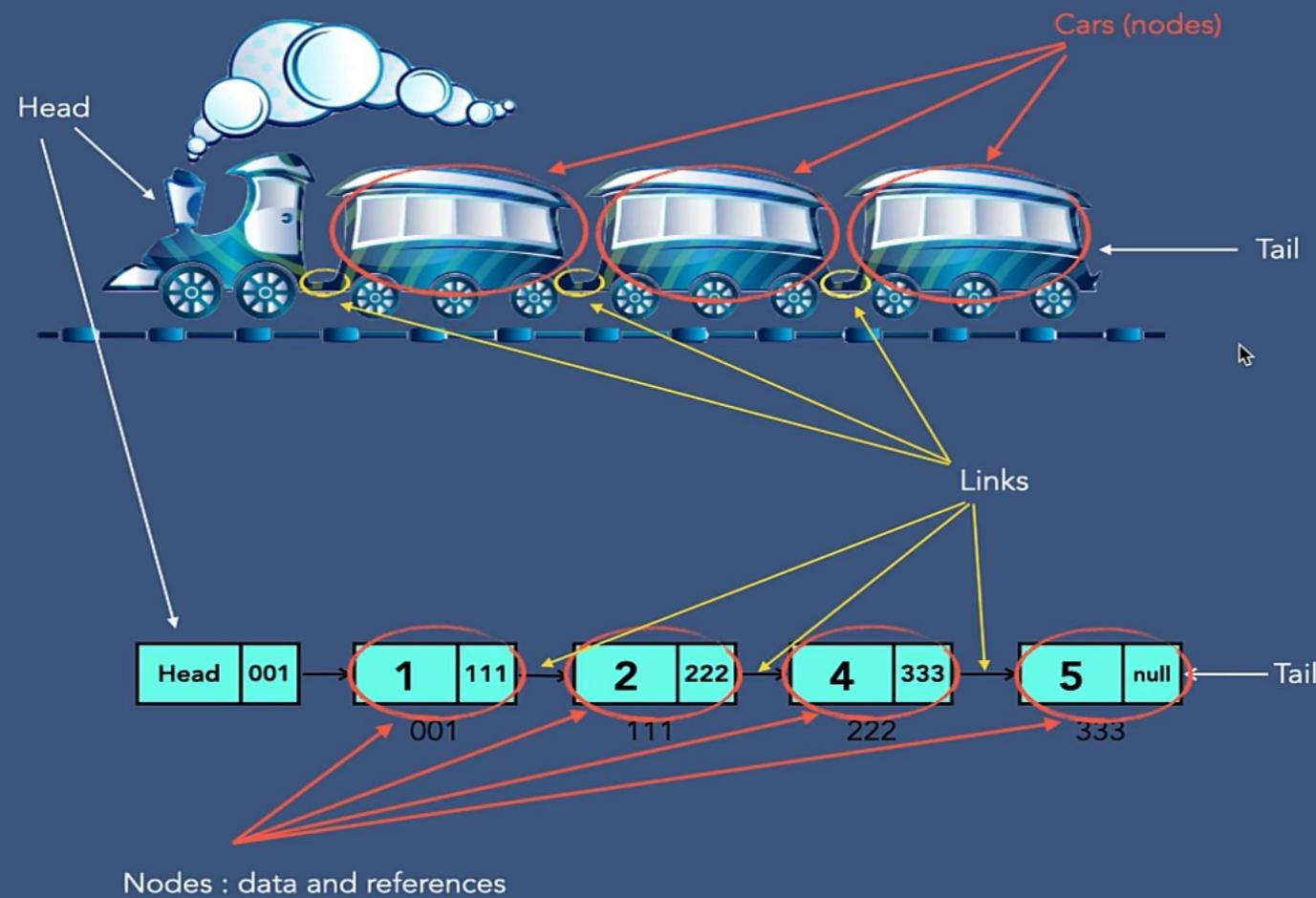
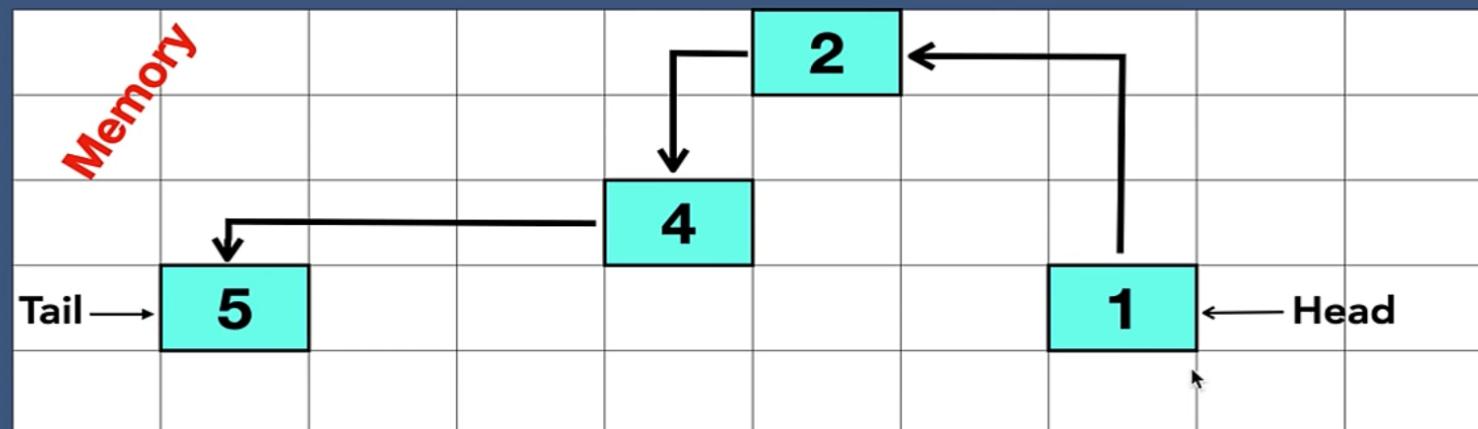
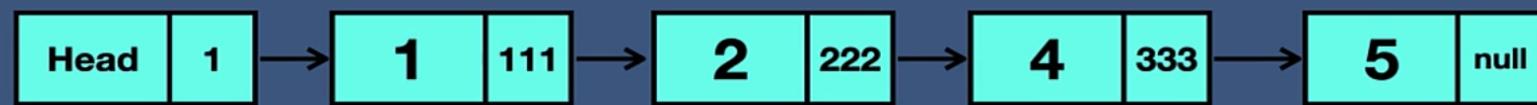


What is a Linked List?

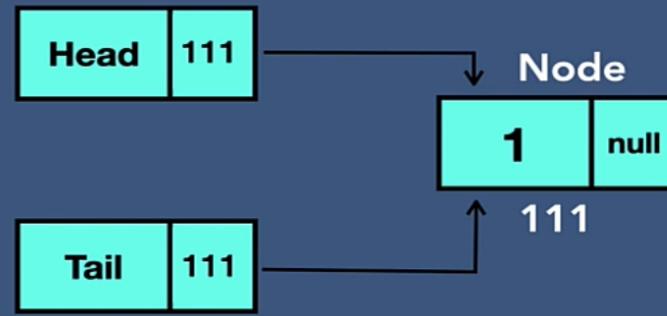


Linked List in Memory

Linked list:



Creation of Singly Linked List



Create Head and Tail, initialize with null

Create a blank Node and assign a value to it and reference to null.

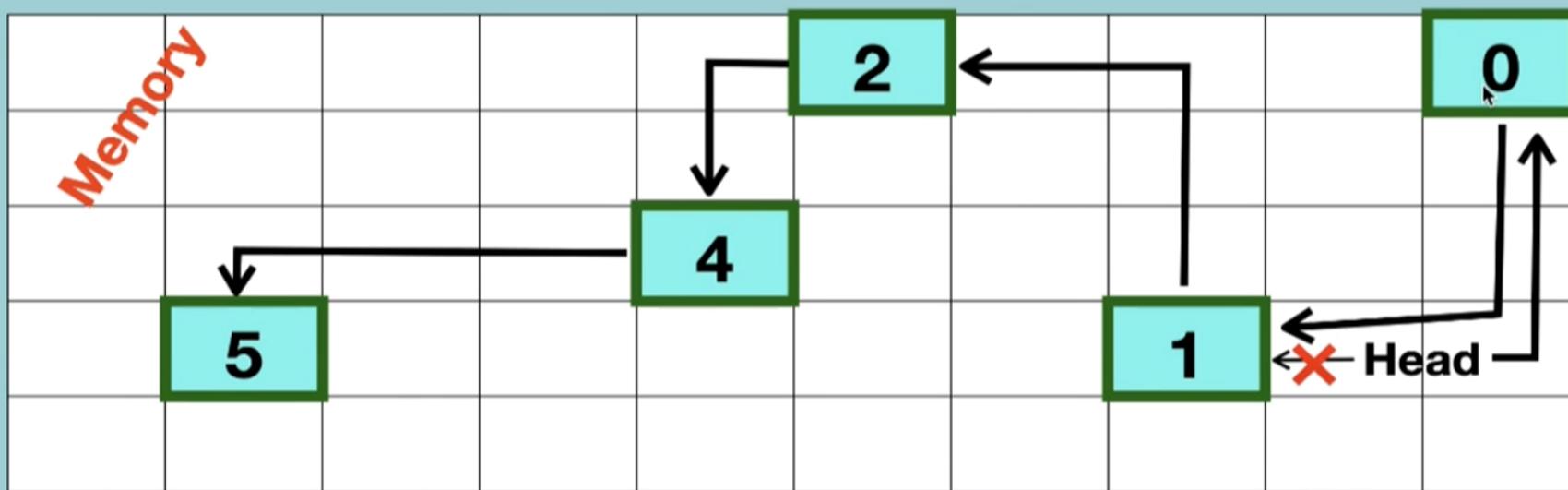
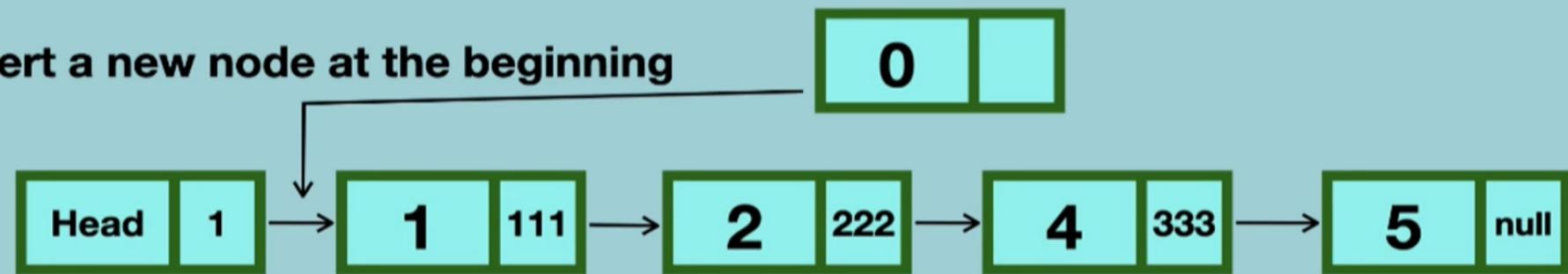
Link Head and Tail with these Node

Insertion to Linked List in Memory

1. At the beginning of the linked list.
2. After a node in the middle of linked list
3. At the end of the linked list.

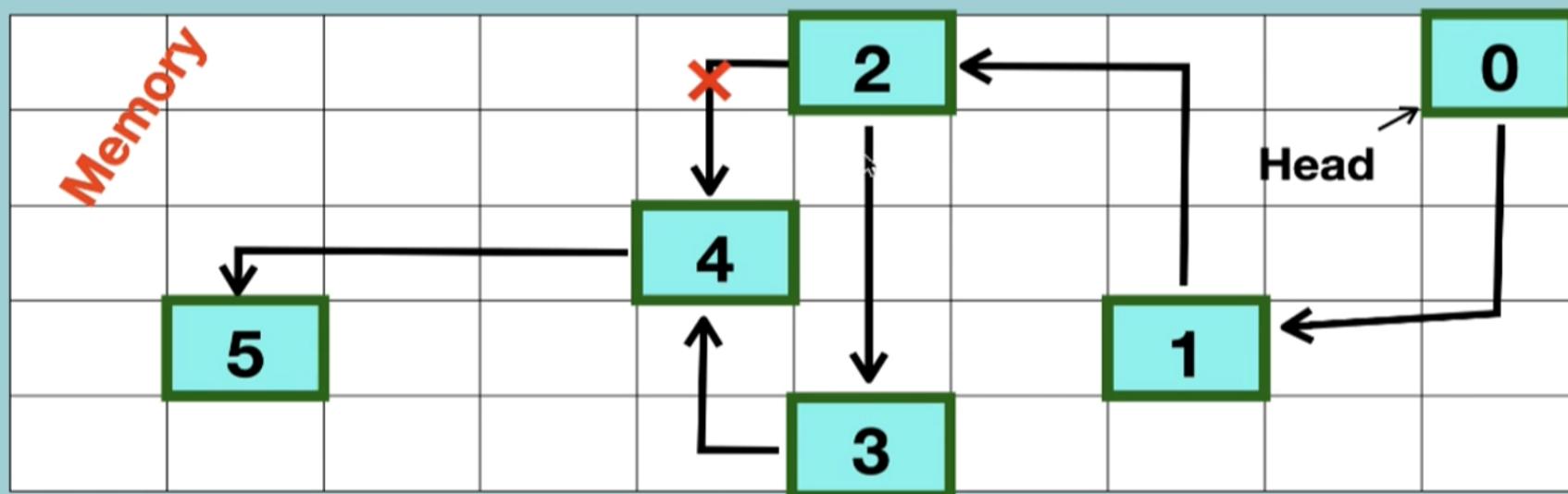
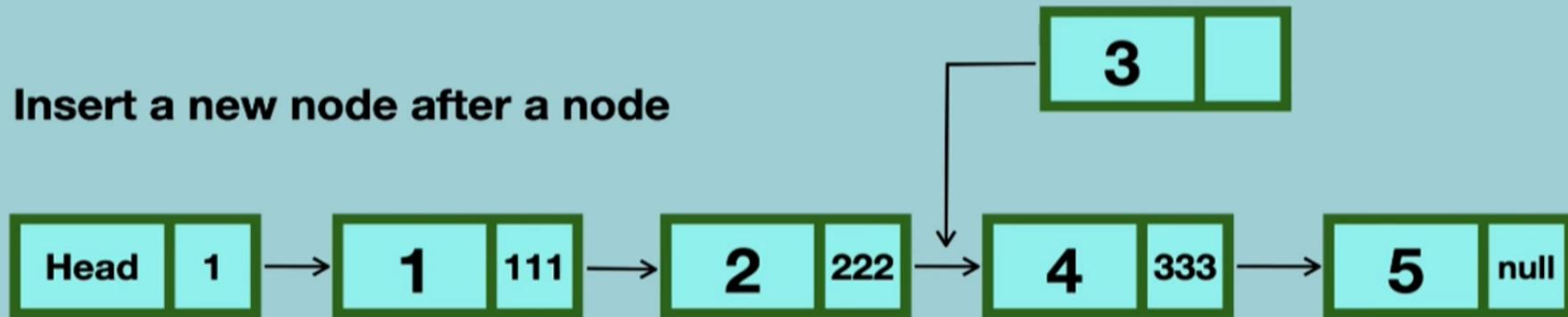
Insertion to Linked List in Memory

Insert a new node at the beginning



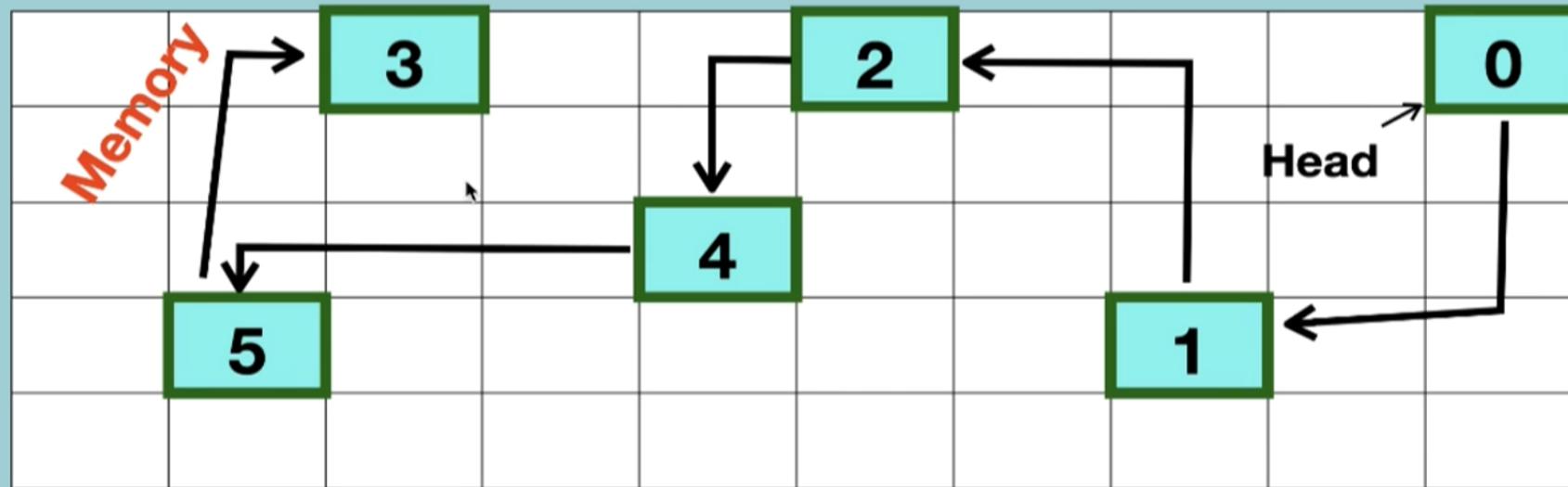
Insertion to Linked List in Memory

Insert a new node after a node

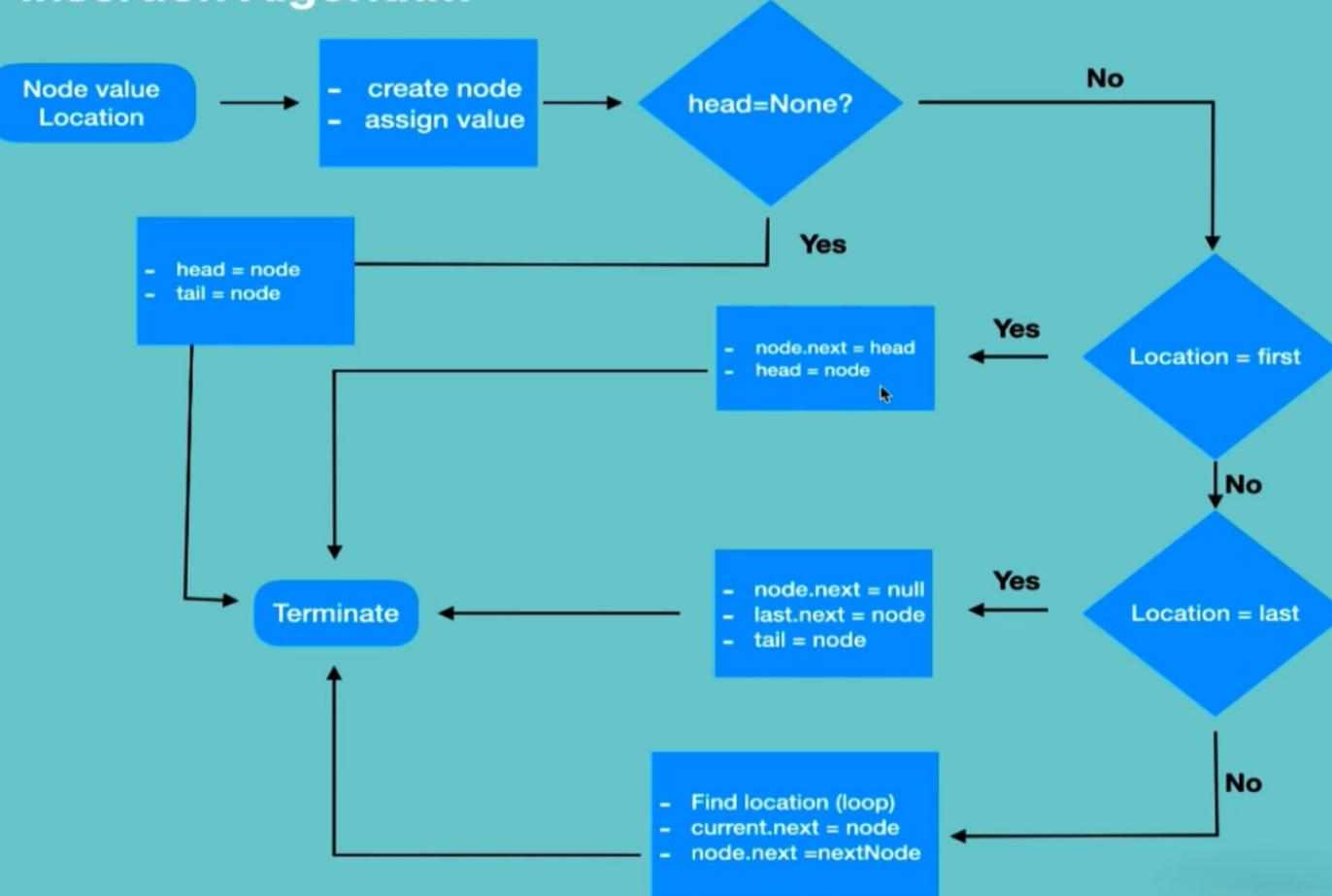


Insertion to Linked List in Memory

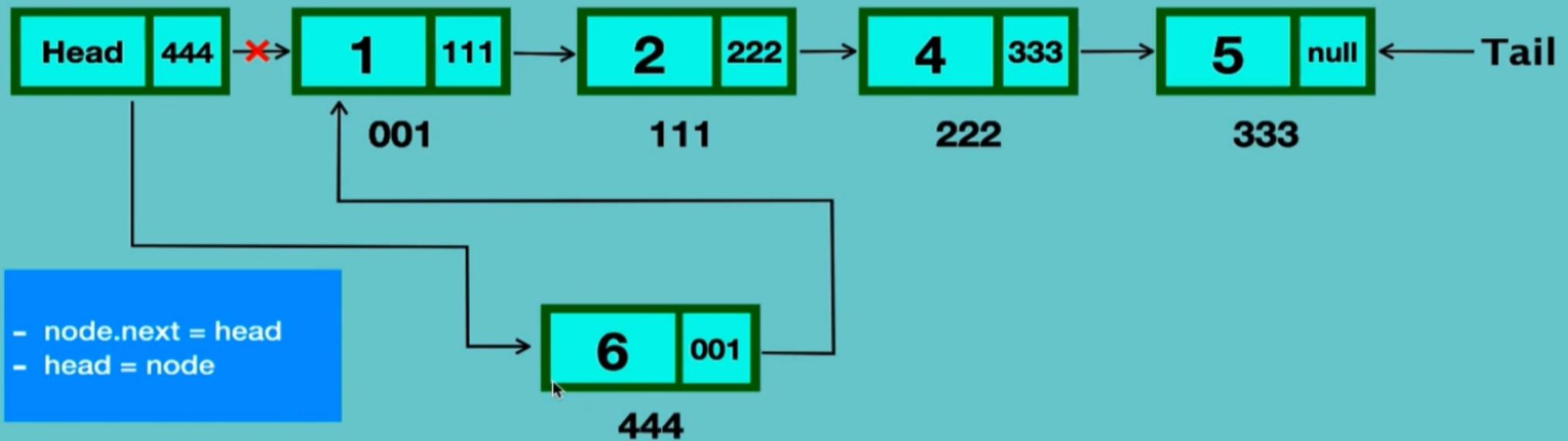
Insert a new node at the end of linked list



Insertion Algorithm

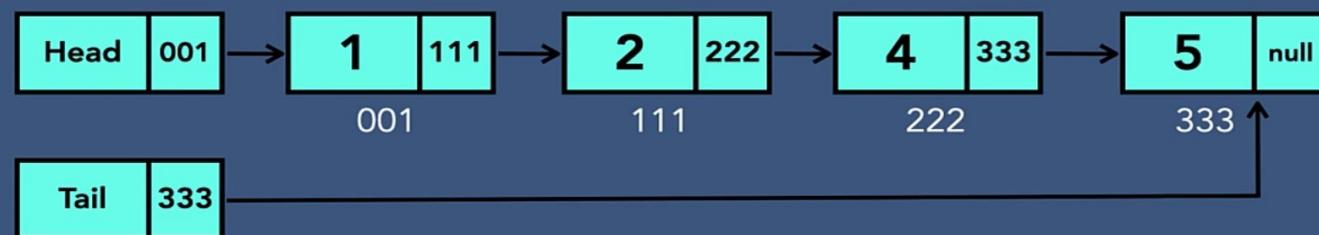


Singly Linked List Insertion at the beginning

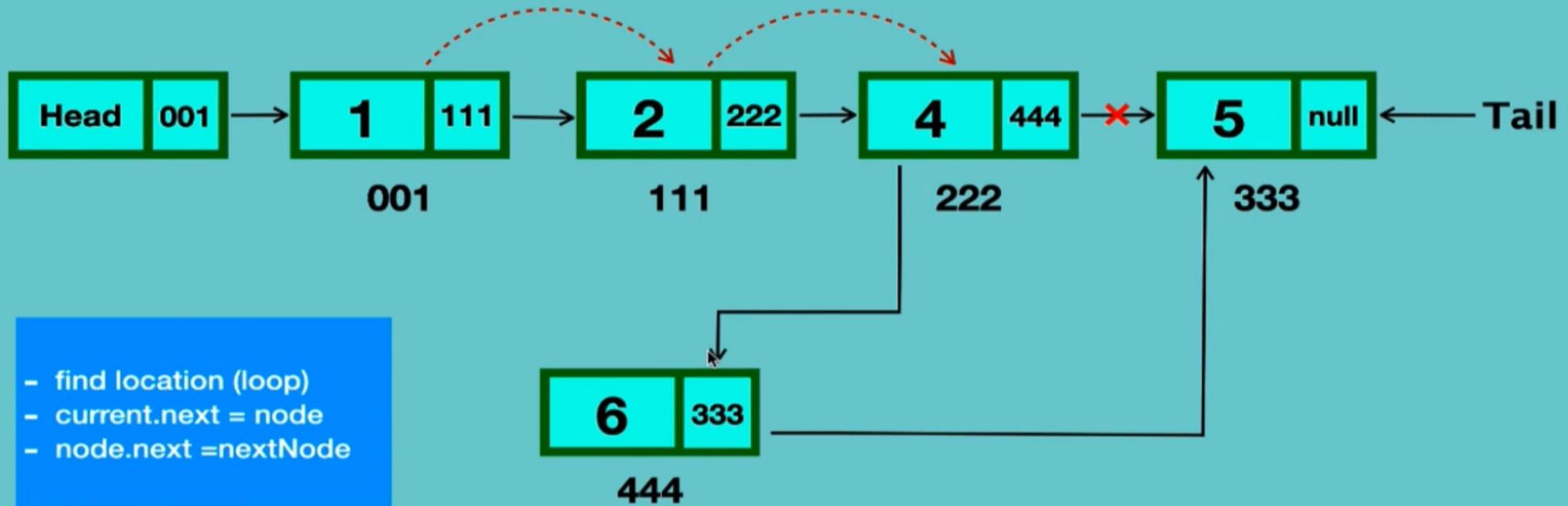


Time and Space Complexity of Singly Linked List

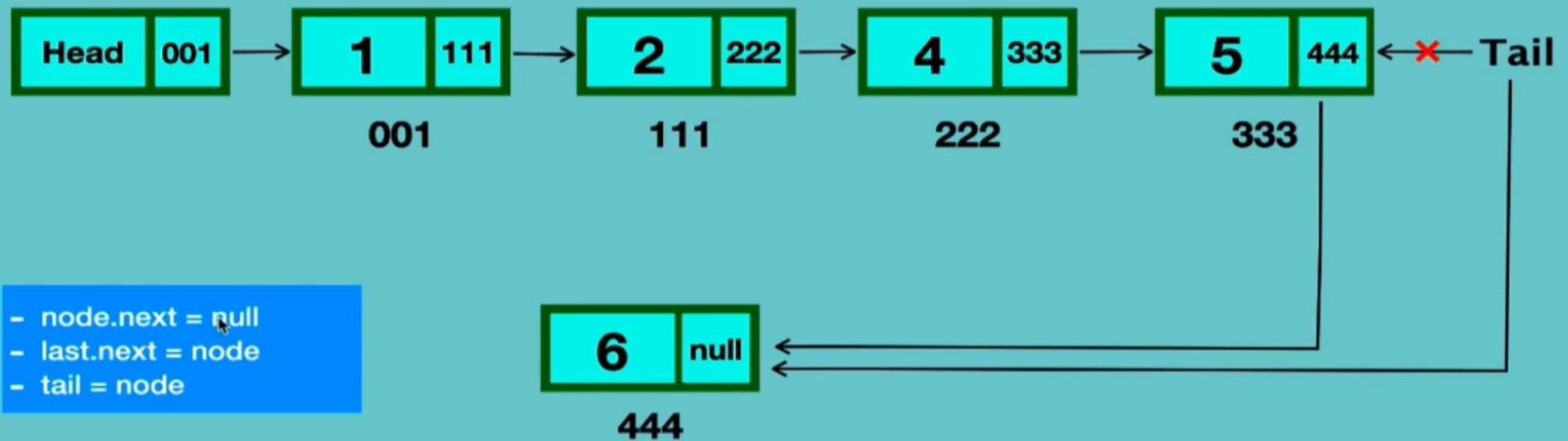
Singly Linked List	Time complexity	Space complexity
Creation	$O(1)$	$O(1)$
Insertion	$O(n)$	$O(1)$
Searching	$O(n)$	$O(1)$
Traversing	$O(n)$	$O(1)$
Deletion of a node	$O(n)$	$O(1)$
Deletion of linked list	$O(1)$	$O(1)$



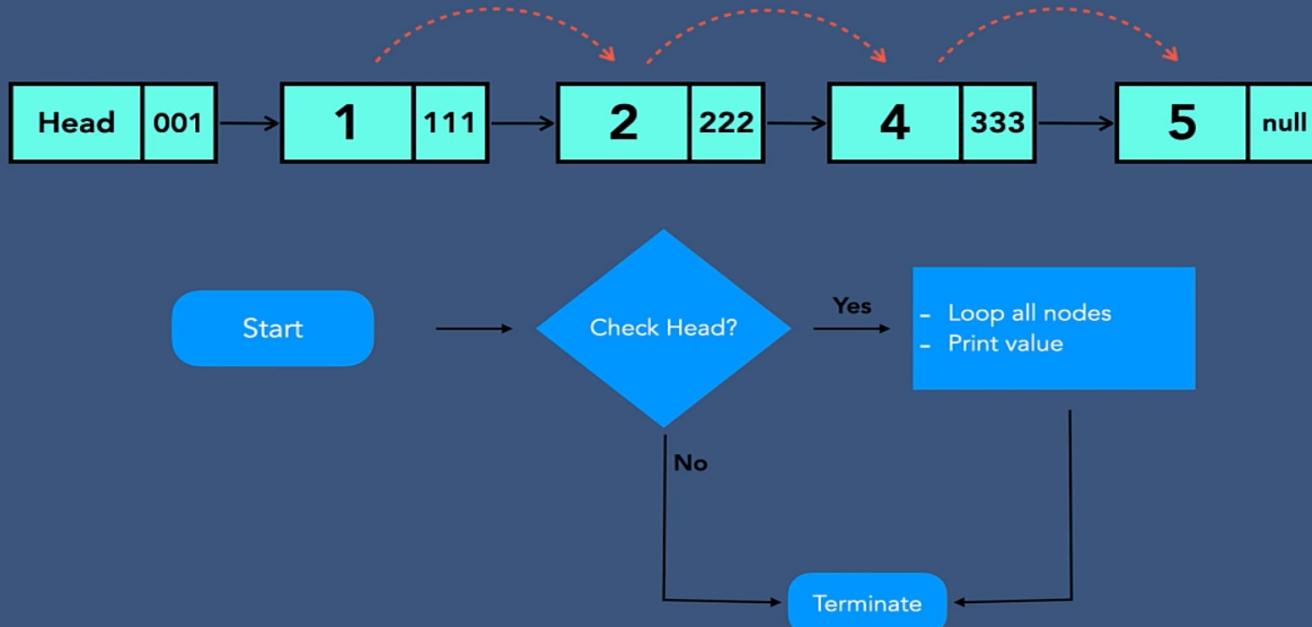
Singly Linked List Insertion in the middle



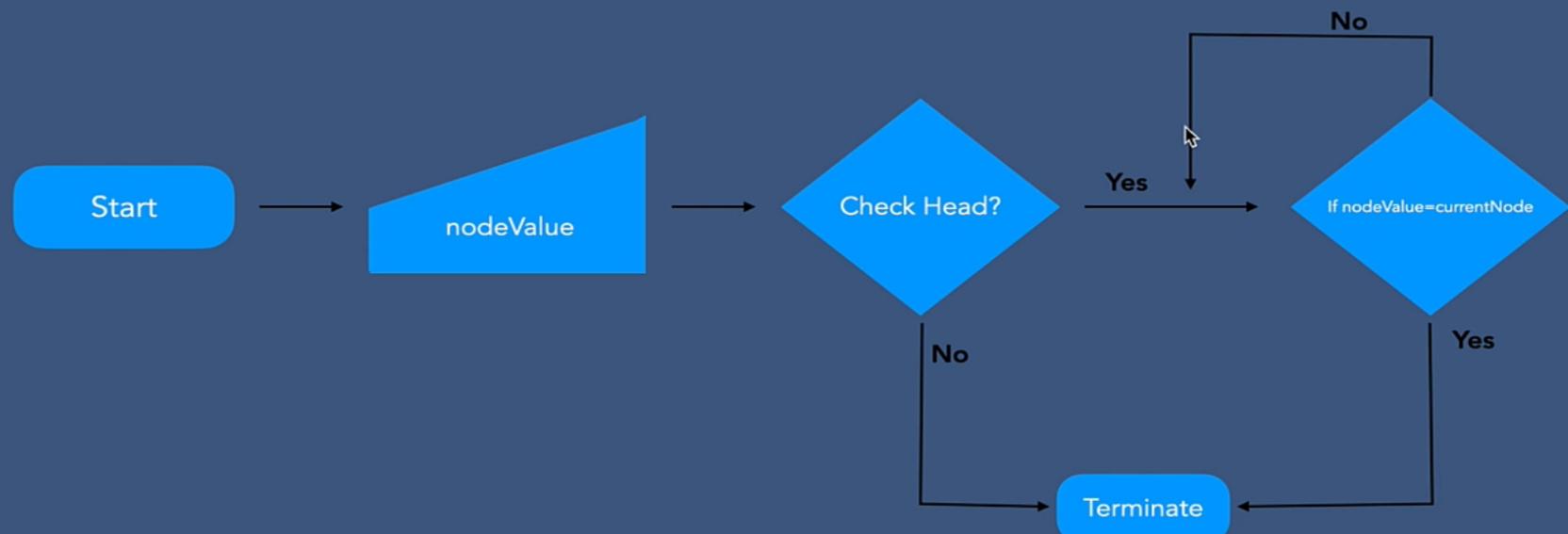
Singly Linked List Insertion at the end



Traversal of Singly Linked List



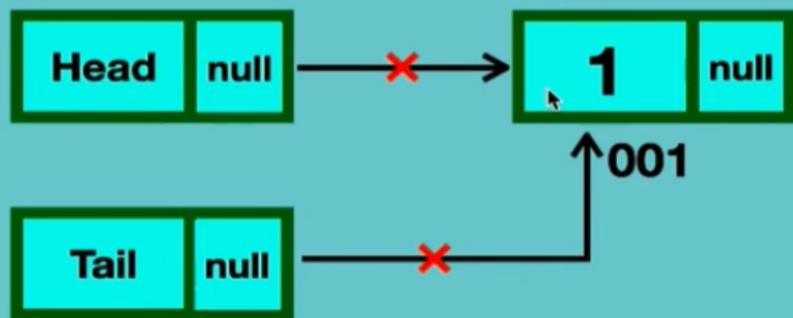
Search in Singly Linked List



Singly Linked list Deletion

- Deleting the first node
- Deleting any given node
- Deleting the last node

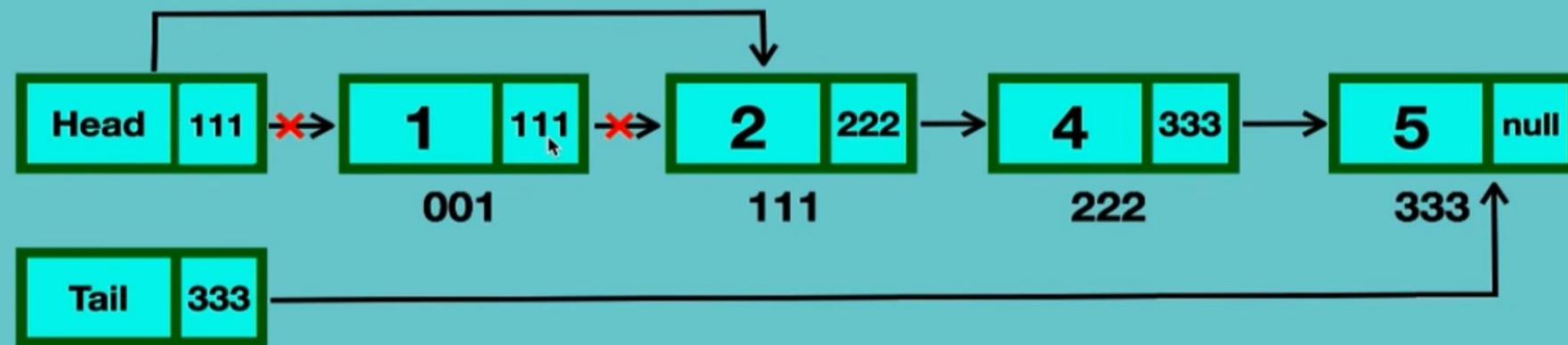
Case 1 - one node



Singly Linked list Deletion

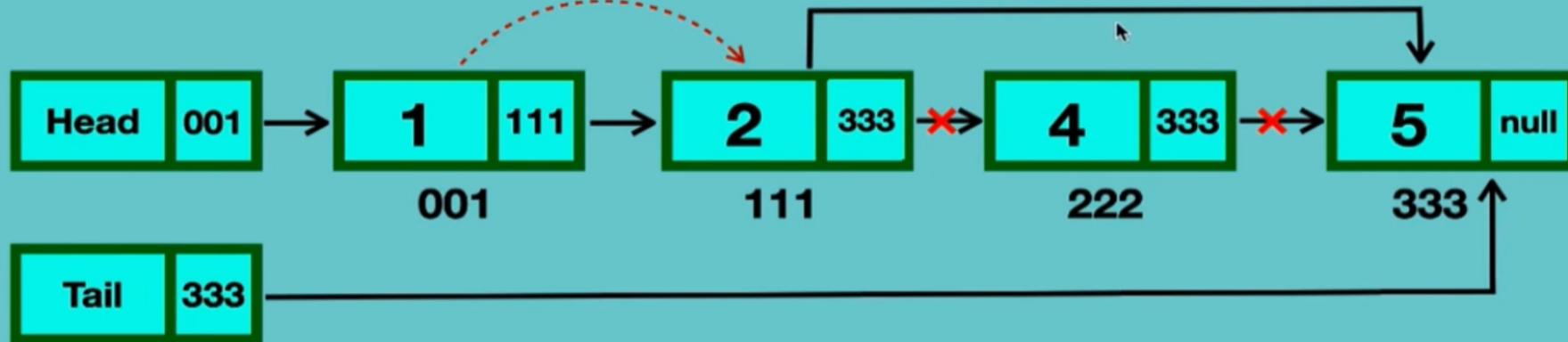
- Deleting the first node
- Deleting any given node
- Deleting the last node

Case 2 - more than one node



Singly Linked list Deletion

- Deleting the first node
- Deleting any given node
- Deleting the last node

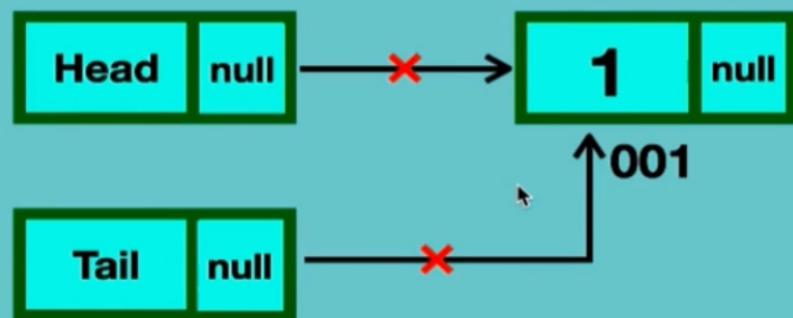


Singly Linked list Deletion

- Deleting the first node
- Deleting any given node
- Deleting the last node



Case 1 - one node

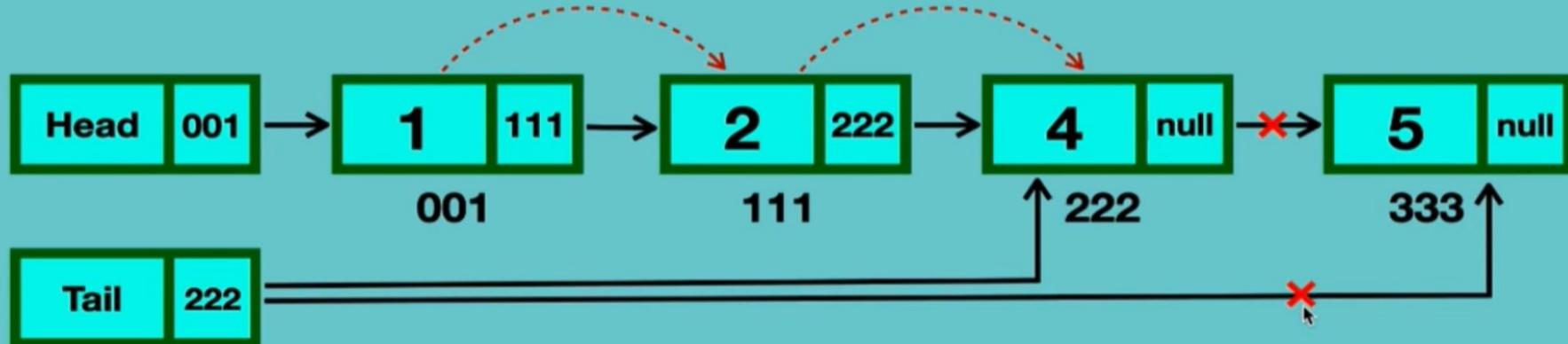


Singly Linked list Deletion

- Deleting the first node
- Deleting any given node
- Deleting the last node



Case 2 - more than one node



Singly Linked list Deletion Algorithm

