Data Structure
Algorithms & Applications

CT-159

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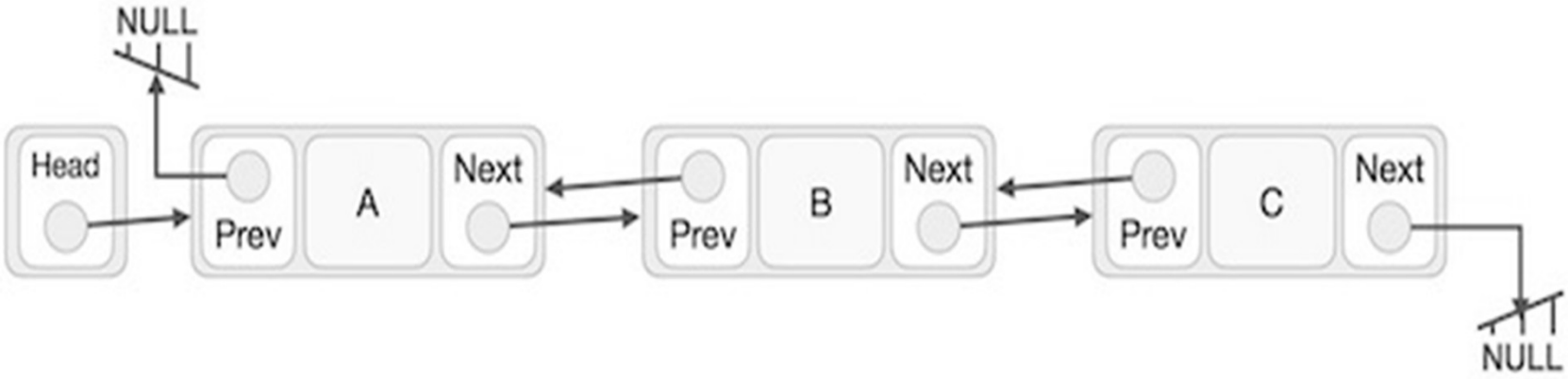
Doubly Linked List

- Doubly Linked List is a variation of Linked list in which navigation is possible in both ways, either forward and backward easily as compared to Single Linked List.



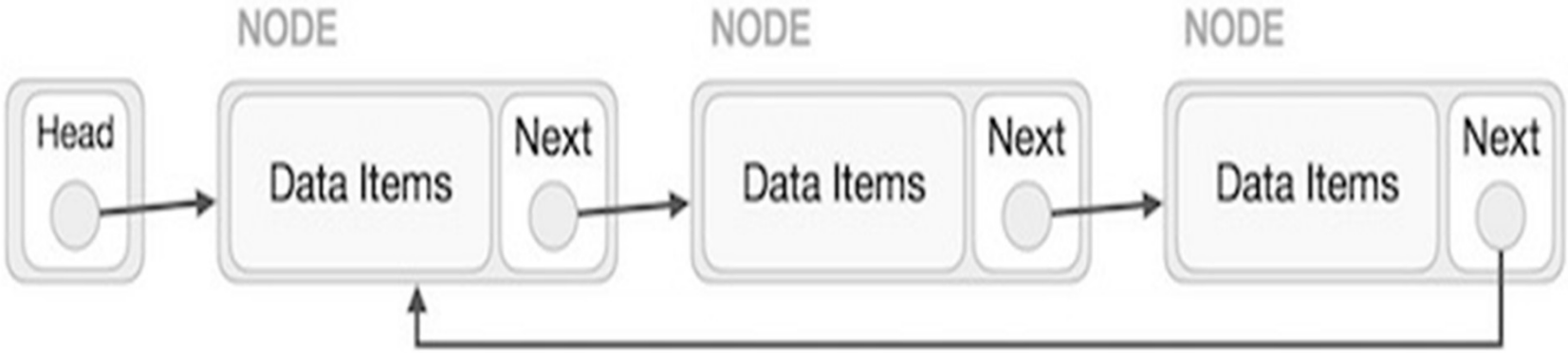
Important Points

- Doubly Linked List contains a link element called first and last.
- Each link carries a data field(s) and two link fields called next and prev.
- Each link is linked with its next link using its next link.
- Each link is linked with its previous link using its previous link.
- The last link carries a link as null to mark the end of the list.

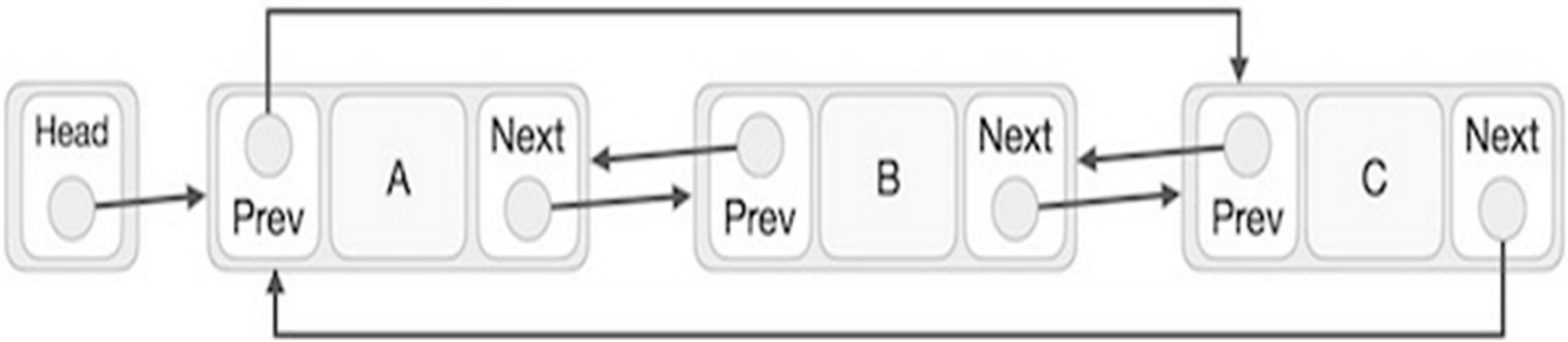
Circular Linked List

- Circular Linked List is a variation of Linked list in which the first element points to the last element and the last element points to the first element. Both Singly Linked List and Doubly Linked List can be made into a circular linked list.

Singly Linked List as Circular



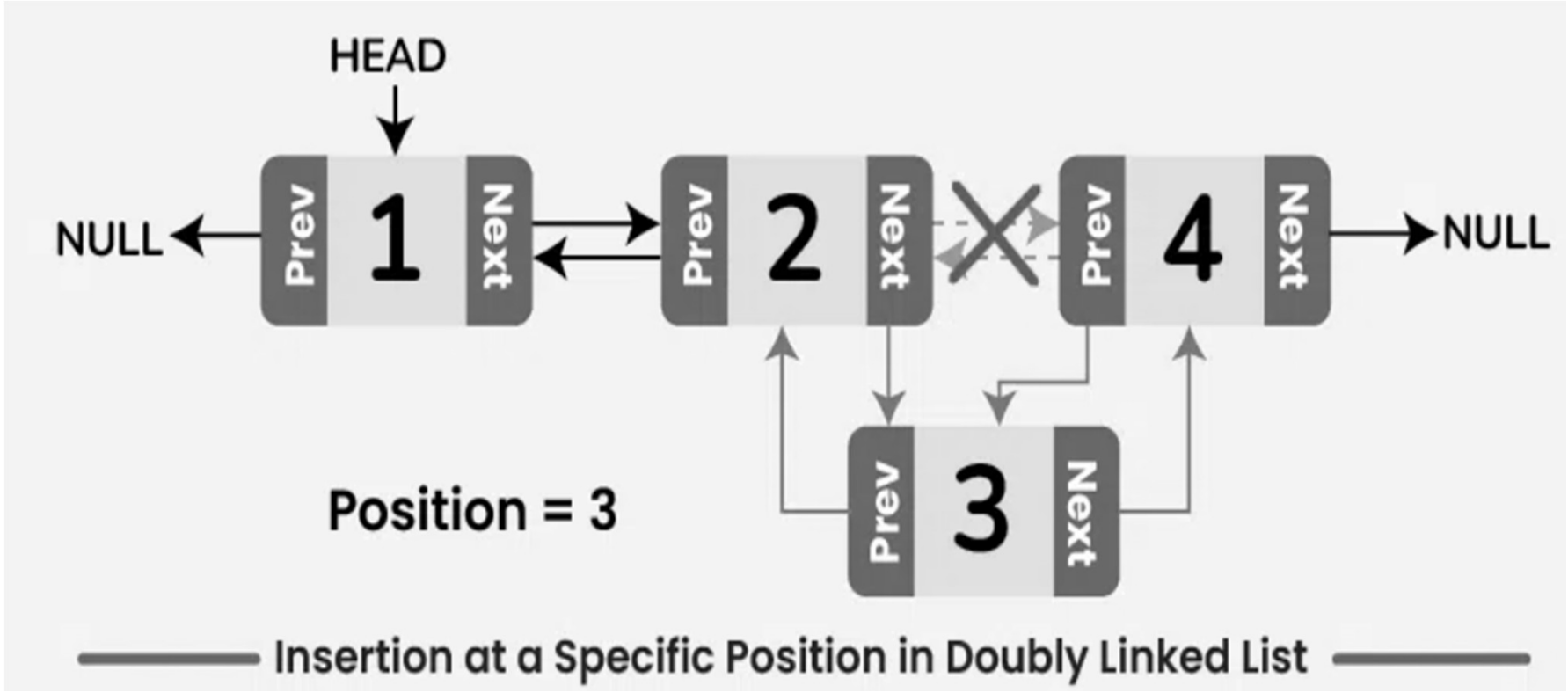
Doubly Linked List as Circular



To add new Node

- If position = 1, create a new node and make it the head of the linked list and return it.
- Otherwise, traverse the list to reach the node at position – 1, say **curr**.
- If the position is valid, create a new node with given data, say **new_node**.
- Update the **new_node->next = curr->next** and **new_node->prev = curr.**
- Similarly, update **curr->next = new_node**.
- If the new node is not the last node, update **new_node->next->prev = new_node.**

To add new Node



Thank You