Doubly linked list

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Major changes to be done:

A node in a doubly linked list stores two references -- a next link, which points to the next node in the list, and a prev link, which points to the previous node in the list. The following major changes need to be done when creating Doubly linked list-

- Firstly, creating a link to the previous node in the overall structure as compared to singly linked list.
- Storing the addresses of both the next and previous node in each node by declaring two node pointers in the structure.
- Initially, the next address field of new node must point to NULL.
- Allocating a start or head node for the next node to be linked to the previous node.
- We assign the value of next from previous node to the next of newNode and the address of newNode to the next of previous node. Same applies for prev pointer.
- The same is taken care of when reversing.

Advantages Of Doubly Linked List:

1. It is easy to reverse doubly linked list.
2. It can allocate or reallocate memory easily during its execution.
3. We can traverse in both directions(bi-directional) i.e., from starting to end and as well as from end to starting.
4. We can delete a node easily as we have access to its previous node.
5. As with a singly linked list, it is the easiest data structure to implement. It is useful in implementing various other data structures.
6. Can grow or shrink in size dynamically.

Disadvantages Of Doubly Linked List:

1. It uses extra memory when compared to the array and singly linked list. Each node stores an extra pointer(required for pointer to previous node) which consumes extra memory.
2. Since elements in memory are stored randomly, therefore the elements are accessed sequentially no direct access is allowed.
3. Insertion and deletion take more time than singly linked list because more pointer operations are required than singly linked list.