DOUBLY LINKED LIST

1. What is a doubly linked list ?

A doubly linked list is a type of linked list which has three fields

1. A data field to store the data
2. A next pointer to store the address of the next node
3. A previous pointer to store the address of the previous pointer

2. How to insert a new node at the end of a doubly linked list ?

1. Traverse till the last node of the list
2. Make the next of last node point to the new node
3. Make the previous of new node point to this node
4. The new node now becomes your last node

3. How to insert a new node as the head node of a doubly linked list ?

1. Store the current head node in a temporary node
2. Make the new node as the head node
3. Make the next of the head node point to the temporary node

4. How to insert a new node in between two nodes of a doubly linked list ?

1. Traverse till the position where the new node is to be inserted at
2. Using the previous pointer of this node, make the next of the previous node point to the new node
3. Make the previous of the new node point to the previous node
4. Make the next of the new node point to this node
5. Make the previous of this node point to the new node

5. How to delete the last node from a doubly linked list ?

1. Check if the next of the next node points to None
2. If it points to None, it means the next node is the last node
3. Nullify the previous pointer of the next node by making its previous point to None
4. Make the next of this node point to None and this node becomes your new last node

6. How to delete the head node of a doubly linked list ?

1. Make the second node as the head node
2. Using the previous of the new head node, make the next of that node (which is the previous head node) point to None

7. How to delete the node that is in between two other nodes of doubly linked list ?

1. Traverse till the position of the node that is to be deleted ?
2. Using the previous of this node, make the next of the previous node point to the next of this node
3. Using the next of this node, make the previous of the next node point the previous of this node
4. Nullify the pointers of this node by making its next and previous point to None

8. What are the limitations of a doubly linked list ?

1. Insertion and deletion takes more time since more pointers are to be set
2. It requires an additional storage to store the address of the previous node