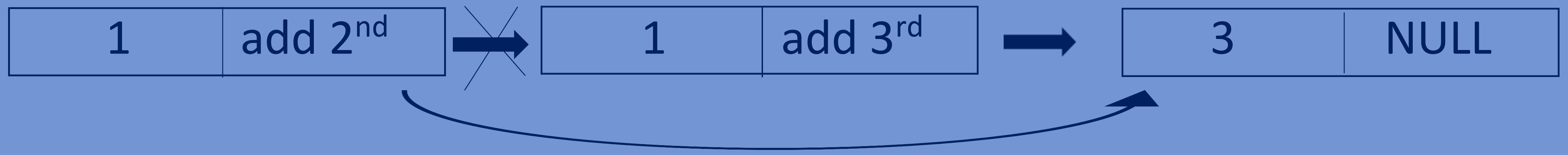
Data Structures

Deleting duplicate node from a sorted linked list

Deleting duplicate value node from a sorted linked list:



- Data in the linked list must be in sorted order.
- Ensure that no two nodes shouldn’t have same data.
- Traverse through the linked list until the last but one node.
- While traversing through the linked list compare data between two Consecutive nodes and if data is repeated, point the next pointer of the Current node to the next pointer of the next node so that the repeated Node gets deleted from the linked list.
- Release the memory of the deleted node using free().
- Normal approach.
- Recursive approach.

Function for Deleting duplicate value node from a sorted linked list(while loop):

```
//deleting duplicate nodes
lin_list * DeleteDuplicateNode(lin_list *head)
{
    if(head==NULL){
        return head;
    }
    lin_list *temp=head;
    while(temp->next!=NULL){
        if(temp->data==temp->next->data){
            temp->next=temp->next->next;
        }
        else{
            temp=temp->next;
        }
    }
    return head;
}
```

Function Deleting duplicate value node from a sorted linked list(using recursion):

```c
//deleting duplicate nodes
lin_list * DeleteDuplicateNode(lin_list *head)
{
    if(head->next==NULL || head==NULL){
        return head;
    }
    if(head->data==head->next->data){
        head->next=head->next->next;
        head=DeleteDuplicateNode(head);
        return head;
    }
    head->next=DeleteDuplicateNode(head->next);
    return head;
}
```

Whole program:

```
#include<stdio.h>
#include<stdlib.h>
//creating a node.
typedef struct lin_list{
    int data;
    struct lin_list *next;
}lin_list;
//inserting nodes
lin_list *insertnode(lin_list *head,int data) {
    lin_list *newnode=(lin_list*)malloc(sizeof(lin_list));
    newnode->data=data;
    newnode->next=head;
    head=newnode;
    return head;
}
//printing the linked list.
void PrintElements(lin_list *head){
    //base condition
    if(head==NULL){
        return;
    }
    printf("%d ",head->data);
    PrintElements(head->next);
}
//deleting duplicate nodes
lin_list * DeleteDuplicateNode(lin_list *head) {
    if(head==NULL){
        return head;
    }
    lin_list *temp=head;
    while(head->next!=NULL){
        if(head->data==head->next->data){
            head->next=head->next->next;
        }
        else{
            head=head->next;
        }
    }
    return temp;
}
//main
int main(){
    lin_list *headA=NULL;
    //inserting elements into linked list
    headA=insertnode(headA,3);
    headA=insertnode(headA,2);
    headA=insertnode(headA,2);
    headA=insertnode(headA,2);
    headA=insertnode(headA,1);
    PrintElements(headA);printf("\n");
    //deleting Duplicate nodes
    headA=DeleteDuplicateNode(headA);
    PrintElements(headA);
    headA=insertnode(headA,1);printf("\n");
    PrintElements(headA);printf("\n");
    headA=DeleteDuplicateNode(headA);
    PrintElements(headA);
    return 0;
}
```

Output:

```
1 2 2 2 3
1 2 3
1 1 2 3
1 2 3
```