Competitive Programming

(https://github.com/MalavikaJayakumar/Competitive-Programming-Problems)

1. **Singly linked list**
    i. **Insertion at the front**
    ii. **Insertion at the tail**
    iii. **Deletion from the front**
    iv. **Deletion from the back**
    v. **Display**

Code:

```
#include <iostream>
using namespace std;

class node
{
    public:
    int data;
    node *next;
};

void insertfront(node** head)
{
    node* n = new node();
       int g;
       cout<<"Enter value to insert at beginning: ";
       cin>>g;
    n->data = g;
    n->next = (*head);
    (*head) = n;
}

void inserttail(node** head)
{
    node* n = new node();

    node *t = *head;
       int g;
       cout<<"Enter element to insert at end: ";
       cin>>g;
    n->data = g;
    n->next = NULL;
    if (*head == NULL)
    {
        *head = n;
        return;
```

```
    }
    while (t->next != NULL)
        t = t->next;
    t->next = n;
    return;
}

void deleteback(node** head)
{
       node* t =*head;
       if(*head ==NULL)
              cout<<"List is empty";
       if(t->next==NULL)
       delete(head);
       while(t->next->next!=NULL)
       {
              t=t->next;
       }
       delete(t->next);
       t->next=NULL;
       return;
}

void deletefront(node** head)
{
       node* t=*head;
       node *x;
       x=t->next;
       delete(t);
       *head=x;
       return;
}

void display(node *n)
{
    while (n != NULL)
    {
        cout<<" "<<n->data;
        n = n->next;
    }
}

int main()
{
    node* head = NULL;
    int ch;
    char c='y';
    cout<<"\t\tMENU\n 1.Insertion at beginning\n 2.Insertion at end\n
3.Deletion from back\n 4.Deletion from start\n";
              while(c=='y')
              {
               cout<<"\nEnter choice(1-4)";
               cin>>ch;
               switch(ch)
```

```
                {
                        case 1:insertfront(&head);
                        break;
                        case 2:inserttail(&head);
                        break;
                        case 3:deleteback(&head);
                        break;
                        case 4:deletefront(&head);
                        break;
                        default:cout<<"invalid choice";
                }
                cout<<"Do you want to continue:(y/n) ";
                cin>>c;
        }


    cout<<"Created Linked list is: ";
    display(head);

    return 0;
}
```

Output:

```
               MENU
 1.Insertion at beginning
 2.Insertion at end
 3.Deletion from back
 4.Deletion from start

Enter choice(1-4)1
Enter value to insert at beginning: 11
Do you want to continue:(y/n) y

Enter choice(1-4)1
Enter value to insert at beginning: 10
Do you want to continue:(y/n) y

Enter choice(1-4)2
Enter element to insert at end: 12
Do you want to continue:(y/n) y

Enter choice(1-4)2
Enter element to insert at end: 13
Do you want to continue:(y/n) y

Enter choice(1-4)2
Enter element to insert at end: 14
Do you want to continue:(y/n) y

Enter choice(1-4)3
Do you want to continue:(y/n) y

Enter choice(1-4)4
Do you want to continue:(y/n) n
Created Linked list is:  11 12 13
```