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//Cinemax USing DCLL
//By:- Mr. Mdkasim Sache
#include<iostream>
#include<iomanip>
#include<conio.h>
using namespace std;
class node
{
    int data;
    node* next;
    node* prev;
    node()
    {
        next=NULL;
        prev=NULL;
        data=0;
    }
    friend class cinemax;
};

class cinemax
{
    int i,n,count,flag;
    node *head,*nn,*temp,*temp1;
public:
    cinemax()
    {
        count=0;
        head=NULL;
    }

    void add(int *cl)
    {
        flag=0;
        if(count==13)
        {
            cout<<"\n\t All Seats Are Reserved.\n";
            goto read;
        }
        if(head==NULL)
        {
            nn=new node;
            head=nn;
            temp=head;
            temp1=head;
            nn->data=*cl;
            nn->prev=nn;
            nn->next=nn;
            ++count;
        }
    }

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else
{
    n=0;
    temp1=head;
    do
    {
        if(temp1->data==*cl)
        {
            cout<<"Already Reserved\n";
            goto read;
        }
        else
        {
            temp1=temp1->next;
            ++n;
        }
    }while(n!=count);
    nn=new node;
    nn->data=*cl;
    do
    {
        if(head->next==head)
        {
            nn->next=head;
            nn->prev=head;
            head->prev=nn;
            head->next=nn;
            ++count;
            if(*cl<head->data)
            {
                head=nn;
            }
            else
            {
                temp=nn;
            }
            flag=1;
        }
        else if(*cl>temp->data && *cl>head->data)
        {
            nn->next=temp->next;
            temp->next->prev=nn;
            temp->next=nn;
            nn->prev=temp;
            temp=nn;
            ++count;
            flag=1;
        }
    }
}

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        else if(*cl<head->data)
        {
            head->prev->next=nn;
            nn->prev=head->prev;
            nn->next=head;
            head->prev=nn;
            head=nn;
            ++count;
            flag=1;
        }
        else
        {
            temp=temp->next;
        }
    }while(flag==0);
}
read: cout<<"\n";
}

void display()
{
    if(head!=NULL)
    {
        temp1=head;
        for(i=1;i<=13;++i)
        {
            n=0;
            temp1=head;
            do
            {
                if(temp1->data==i)
                {
                    cout<<"-"<<" ";
                    break;
                }
                else
                {
                    temp1=temp1->next;
                    ++n;
                }
            }while(n!=count);
            if(n==count)
                cout<<i<<" ";
        }
    }
    else
    {
        for(i=1;i<=13;++i)
        {
            cout<<i<<" ";
        }
    }
}

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cout<<endl;
}
void del(int*cl)
{
    if(head!=NULL)
    {
        temp1=head;
        n=0;
        do
        {
            if(temp1->data!=*cl)
            {
                temp1=temp1->next;
                ++n;
            }
            else
            {
                if(temp1==head)
                {
                    head->prev->next=head->next;
                    head->next->prev=head->prev;
                    nn=head;
                    head=head->next;
                    delete nn;
                    --count;
                    --n;
                    break;
                }
                else
                {
                    temp1->prev->next=temp1->next;
                    temp1->next->prev=temp1->prev;
                    nn=temp1;
                    temp1=temp1->next;
                    delete nn;
                    --count;
                    --n;
                    break;
                }
            }
        }while(n!=count);

        if(n==count)
        {
            cout<<"\tNot A Reserved Seat\n";
        }
        else
        {
            cout<<"\tSuccefully Deleted\n";
        }
    }
}

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        else
        {
            cout<<"\n\tNo Bookings To Delete\n";
        }
        if(count==0)
        {
            head=NULL;
        }
    }
};

int main()
{
    int r,cl,c,i;
    cinemax rows[10];
    cout<<"Welcome To Sinhgad CinePlaza\n";
    cout<<"=====\n\n";
    do
    {
        cout<<"\n\t1.Book\n\t2.Seat Matrix\n\t3.Cancellation\n\t4.Exit\t\t\t ";
        cout<<"Enter The Choice\t : ";
    read:  cin>>c;
        switch(c)
        {
            case 1:
                cout<<"\n\tEnter The Row Number\t : ";
                do
                {
                    cin>>r;
                    if(r<=0 || r>10)
                        cout<<"\tEnter The Valid Row No.\t";
                }while(r<=0 || r>10);
                r=r-1;

                cout<<"\tEnter The Seat No.\t : ";
                do
                {
                    cin>>cl;
                    if(cl>13 || cl<=0)
                        cout<<"\tEnter The Valid Seat No.\t";
                }while(cl>13 || cl<=0);
                rows[r].add(&cl);
                cout<<endl<<endl;
                break;

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        case 2:
            cout<<"\nSinhgad CinePlaza Screen 1 Sear Matrix\n";

            cout<<"=====\\n"
;

            cout<<endl;
            for(i=0;i<10;i++)
            {
                cout<<setw(3)<<i+1<<"] ";
                rows[i].display();
            }
            break;

        case 3:
            cout<<"\n\tEnter Seat Row\t : ";
            do
            {
                cin>>r;
                if(r==0 || r>10)
                    cout<<"\tEnter The Valid Row No.\t";
            }while(r==0 || r>10);
            r=r-1;

            cout<<"\n\tEnter Seat No.\t : ";
            do
            {
                cin>>cl;
                if(cl>13 || c<=0)
                    cout<<"\tEnter The Valid Seat No.\t";
            }while(cl>13);
            rows[r].del(&cl);
            break;

        case 4:
            cout<<endl;
            break;

        default:
            cout<<"Enter The Proper Choice\t : ";
            goto read;

    }
}while(c!=4);

cout<<"Closing The System.....\\n";
getch();
getch();
return 0;
}

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