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#include<iostream>
using namespace std;
struct TF
{
    int value;
    TF *link;
}*HT[10];

class Telephone
{
public:

    Telephone()
    {
        for(int i=0;i<10;i++)
        {
            HT[i]=NULL;
        }
    }

    int Fn_hash(int value)
    {
        return(value%10);
    }

    TF *create_TF(int x)
    {
        TF *temp=new TF;
        temp->link=NULL;
        temp->value=x;
        return temp;
    }

    void print()
    {
        for(int i=0;i<10;i++)
        {
            TF *temp=new TF;
            temp=HT[i];
            cout<<"a["<<i<<"]:";
            while(temp!=NULL)
            {
                cout<<"->"<<temp->value;
                temp=temp->link;
            }
        }
    }
}

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        cout<<"\n";
    }
}

int searchdata(int value)
{
    bool flag=false;
    int hash_val=Fn_hash(value);
    TF *entry=HT[hash_val];
    while(entry!=NULL)
    {
        if(entry->value==value)
        {
            cout<<"\nElement found at ";
            cout<<hash_val<<": "<<entry->value<<endl;
            flag=true;
        }

        entry=entry->link;
    }

    if(!flag)
        return -1;
}

void deleteElement(int value)
{
    int hash_val=Fn_hash(value);
    TF *entry=HT[hash_val];
    if(entry==NULL)
    {
        cout<<"element not found ";
        return;
    }

    if(entry->value==value)
    {
        HT[hash_val]=entry->link;
        return;
    }

    while((entry->link)->value!=value)
    {
        entry=entry->link;
    }
}

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        entry->link=(entry->link)->link;
    }

    void insertElement(int value)
    {
        int hash_val=Fn_hash(value);
        TF *temp=new TF;
        TF *head=new TF;
        head=create_TF(value);
        temp=HT[hash_val];

        if(temp==NULL)
        {
            HT[hash_val]=head;
        }

        else
        {
            while(temp->link!=NULL)
            {
                temp=temp->link;
            }
            temp->link=head;
        }
    }
};

int main()
{
    int ch=1,data,search,del;
    Telephone h;

    while(ch<5&&ch!=0)
    {
        cout<<"\nTelephone : \n1.Insert\n2.Display\n3.Search\n4.Delete\n5.Exit";
        cout<<"\nSelect your choice ";
        cin>>ch;
        switch(ch)
        {
            case 1:
                cout<<"\nEnter phone number to be inserted:";
                cin>>data;
                h.insertElement(data);
                break;

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    case 2:
        h.print();
        break;

    case 3:
        cout<<"\nEnter number to be searched ";
        cin>>search;
        if(h.searchdata(search)==-1)
        {
            cout<<"\nNo element found at key ";
            continue;
        }
        break;

    case 4:
        cout<<"\nEnter number to be deleted ";
        cin>>del;
        h.deleteElement(del);
        cout<<"\nContact deleted ";
        break;

    }
}
return 0;
}

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