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#include<iostream>
#include<string.h>
using namespace std;

    struct node
    {
        int value;
        node* next;
    }*HashTable[10];

class hashing
{
public:
    hashing()
    {
        for(int i=0 ; i<10 ; i++)
        {
            HashTable[i]=NULL;
        }
    }

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

    node* create_node(int x)
    {
        node* temp=new node;
        temp->next=NULL;
        temp->value=x;
        return temp;
    }

    void display()
    {
        for(int i=0 ; i< 10; i++)
        {
            node * temp=new node;
            temp=HashTable[i];
            cout<<"a["<<i<<"] : ";
            while(temp !=NULL)
            {
                cout<<" ->"<<temp->value;
                temp=temp->next;
            }
            cout<<"\n";
        }
    }

    int searchElement(int value)
    {
        bool flag = false;
        int hash_val = HashFunction(value);
        node* entry = HashTable[hash_val];
        cout<<"\nElement found at : ";
        while (entry != NULL)
        {
            if (entry->value==value)
            {

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        cout<<hash_val<<" : "<<entry->value<<endl;
        flag = true;
    }
    entry = entry->next;
}
if (!flag)
    return -1;
}

void deleteElement(int value)
{
    int hash_val = HashFunction(value);
    node* entry = HashTable[hash_val];
    if (entry == NULL )
    {
        cout<<"No Element found ";
        return;
    }

    if(entry->value==value)
    {
        HashTable[hash_val]=entry->next;
        return;
    }
    while ((entry->next)->value != value)
    {
        entry = entry->next;
    }
    entry->next=(entry->next)->next;
}

void insertElement(int value)
{
    int hash_val = HashFunction(value);

    node* temp=new node;
    node* head=new node;
    head = create_node(value);
    temp=HashTable[hash_val];
    if (temp == NULL)
    {
        HashTable[hash_val] =head;
    }
    else
    {
        while (temp->next != NULL)
        {
            temp = temp->next;
        }
        temp->next =head;
    }
}
};
int main()
{
    int ch;
    int data,search,del;
    hashing h;
    do

```

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{
cout<<"\nTelephone : \n1.Insert \n2.Display \n3.Search \n4.Delete \n5.Exit";
    cin>>ch;
    switch(ch)
    {
        case 1:cout<<"\nEnter phone no. to be inserted : ";
            cin>>data;
h.insertElement(data);
            break;
        case 2:h.display();
            break;
        case 3:cout<<"\nEnter the no to be searched : ";
            cin>>search;

            if (h.searchElement(search) == -1)
            {
                cout<<"No element found at key ";
                continue;
            }
            break;
        case 4:cout<<"\nEnter the phno. to be deleted : ";
            cin>>del;
            h.deleteElement(del);
            cout<<"Phno. Deleted"<<endl;
            break;
    }
}while(ch!=5);
return 0;
}

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