#include<iostream>

#include<string.h>

using namespace std;

struct Node

{

long long int value;

Node\* next;

}\*Hashtable[10];

class Hashing {

public:

Hashing(){

for(int i=0;i<10;i++){

Hashtable[i]=NULL;

}

}

int hashfunction(long long int value){

return(value%10);

}

Node\* create(int x){

Node\* temp=new Node;

temp->value=x;

temp->next=NULL;

return temp;

}

void display(){

for(int i=0;i<10;i++){

Node\* temp=new Node;

temp=Hashtable[i];

cout<<"[A"<<i<<"]"<<"\n";

while(temp!=NULL){

cout<<"->"<<temp->value<<" ";

temp=temp->next;

}

cout<<"\n";

}

}

int search(long long int value){

bool flag=false;

int hash\_val=hashfunction(value);

Node\* entry=Hashtable[hash\_val];

while(entry!=NULL){

if(entry->value==value){

cout<<hash\_val<<" "<<entry->value<<"\n";

flag=true;

}

else

entry=entry->next;

}

if(!flag){

return -1;

}

}

void insert(long long int value){

Node\* temp=new Node;

Node\* head=new Node;

int hash\_val=hashfunction(value);

temp=Hashtable[hash\_val];

head=create(value);

if(temp==NULL){

Hashtable[hash\_val]=head;

}

else{

while(temp->next!=NULL){

temp=temp->next;

}

temp->next=head;

}

}

void remove(long long int value) {

int hash\_val=hashfunction(value);

Node\* entry=Hashtable[hash\_val];

if(entry==NULL){

cout<<"Value not found"<<"\n";

return;

}

if(entry->value==value)

Hashtable[hash\_val]=entry->next;

return;

while((entry->next)->value!=value){

entry=entry->next;

}

entry->next=(entry->next)->next;

}

};

int main(){

int choice,ch;

long long int data,search\_val,del;

Hashing h;

do{

cout<<"1.insert"<<"\n";

cout<<"2.search"<<"\n";

cout<<"3.display"<<"\n";

cout<<"4.delete"<<"\n";

cin>>choice;

switch(choice){

case 1:

cout<<"Enter the no"<<"\n";

cin>>data;

h.insert(data);

break;

case 2:

cout<<"Enter value to search"<<"\n";

cin>>search\_val;

if(h.search(search\_val)==-1){

cout<<"NO key is present"<<"\n";

continue;

}

case 3:

h.display();

break;

case 4:

cout<<"Enter the value to delete"<<"\n";

cin>>del;

h.remove(del);

cout<<"Value deleted"<<"\n";

}

cout<<"Do you want to continue"<<"\n";

cin>>ch;

}while(ch==5);

}