﻿#include<iostream>

#include<vector>

#include<array>

#include <list>

#include<algorithm>

using namespace std;

class HashedObj{

public:

int rep;

HashedObj(int x){

rep = x;

}

};

template <typename HashedObj>

class HashTable{

public: vector<vector<HashedObj>> theList;

HashTable(int x){

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

vector<HashedObj> newlist;

theList.push\_back(newlist);

}

}

void makeEmpty(){

for( auto & tList : theList )

tList.clear();

}

bool contains (HashedObj & x){

auto & whichList = theList[x.rep % 10];

for(int i = 0; i < whichList.size(); i++){

if(whichList[i].rep == x.rep)

return true;

}

return false;

//return find\_list(begin(whichList), end(whichList), x) != end( whichList );

}

bool rem (HashedObj & x){

auto & whichList = theList[x.rep % 10];

int itr = -1;

for(int i = 0; i < whichList.size(); i++){

if(whichList[i].rep == x.rep){

itr = i;

break;

}

}

if (itr == -1)

return false;

whichList.erase(begin(whichList) + itr);

/\*auto itr = find\_list(begin( whichList ), end( whichList ), x );

if( itr == end( whichList ) )

return false;

whichList.erase( itr );\*/

return true;

}

void display(){

for(int i = 0; i < theList.size(); i++){

if (theList[i].size() == 0){

continue;

}

cout<<i<<" -> ";

for(int j = 0; j < theList[i].size(); j++){

cout<<theList[i][j].rep<<" ";

}

cout<<"\n";

}

}

bool insertion( HashedObj & x ){

int i = x.rep % 10;

auto & whichList = theList[i];

whichList.push\_back(x);

return true;

}

};

int main(){

HashedObj h3(30);

HashedObj h4(40);

HashTable <HashedObj> hlist(101);

cout<<"Initial contents:\n";

hlist.display();

int choice,element;

do{

cout<<"1.insertion"<<endl;

cout<<"2.deletion"<<endl;

cout<<"3.display"<<endl;

cout<<"4.Exit"<<endl;

cin>>choice;

switch(choice)

{

case 1:

{

cout<<"enter element";

cin>>element;

HashedObj h1(element);

if(!hlist.contains(h1))

hlist.insertion(h1);

}

break;

case 2:

{

cout<<"enter element for deletion"<<endl;

cin>>element;

HashedObj h2(element);

if(hlist.rem(h2))

cout<<"deleted\n";

}

break;

case 3:

cout<<"After inserting h1-4:\n";

hlist.display();

break;

}

}while(choice<=3);

return 0;

}