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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;
            }
            cout << "\n";
        }
    }
    int searchdata(int value)
    {
        bool flag = false;
        int hash_val = Fn_hash(value);
        TF *entry = HT[hash_val];
        while (entry != NULL)
        {

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        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;
    }
    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;
    }
}

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    }
};
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;
            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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