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CLASS: SE COMPUTER

DIV: A

BATCH: B3

ASSIGNMENT NO:1

CODE:-

```
#include<iostream>
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)
        {
            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{
        cout<<"\nTelephone : \n1.Insert \n2.Display \n3.Search \n4.Delete \n5.Exit \n\n
OPTION: ";
        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;
}
```

OUTPUT:-

```
Telephone :
1.Insert
2.Display
3.Search
4.Delete
```

```
5.Exit

 OPTION: 1

Enter phone no. to be inserted : 1234

Telephone :
1.Insert
2.Display
3.Search
4.Delete
5.Exit

 OPTION: 1

Enter phone no. to be inserted : 2345

Telephone :
1.Insert
2.Display
3.Search
4.Delete
5.Exit

 OPTION: 1

Enter phone no. to be inserted : 5678

Telephone :
1.Insert
2.Display
3.Search
4.Delete
5.Exit

 OPTION: 1

Enter phone no. to be inserted : 7890
```

```
Telephone :
1.Insert
2.Display
3.Search
4.Delete
5.Exit

 OPTION: 1

Enter phone no. to be inserted : 3678

Telephone :
1.Insert
2.Display
3.Search
4.Delete
5.Exit

 OPTION: 2
a[0] :  ->7890
a[1] :
a[2] :
a[3] :
a[4] :  ->1234
a[5] :  ->2345
a[6] :
a[7] :
a[8] :  ->5678 ->3678
a[9] :

Telephone :
1.Insert
2.Display
3.Search
4.Delete
5.Exit

 OPTION: 3
```

```
Enter the no to be searched : 3678

Element found at : 8 : 3678

Telephone :
1.Insert
2.Display
3.Search
4.Delete
5.Exit

 OPTION: 4

Enter the phno. to be deleted : 1234
Phno. Deleted

Telephone :
1.Insert
2.Display
3.Search
4.Delete
5.Exit

 OPTION: 2
a[0] :  ->7890
a[1] :
a[2] :
a[3] :
a[4] :
a[5] :  ->2345
a[6] :
a[7] :
a[8] :  ->5678 ->3678
a[9] :

Telephone :
1.Insert
2.Display
3.Search
```

```
4.Delete
5.Exit

 OPTION: 5
```