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CLASS: SE COMPUTER

DIV: A

BATCH: B3

ASSIGNMENT NO:2

CODE:-

```
#include<iostream>
#include<string.h>
using namespace std;
class HashFunction
{
    typedef struct hash
    {
        long key;
        char name[10];
    }hash;
    hash h[10];
    public:
    HashFunction();
    void insert();
    void display();
    int find(long);
    void Delete(long);
};
HashFunction::HashFunction()
{
    int i;
    for(i=0;i<10;i++)
    {
        h[i].key=-1;
        strcpy(h[i].name,"NULL");
    }
}
void HashFunction::Delete(long k)
{
    int index=find(k);
    if(index!=-1)
    {
```

```

    cout<<"\n\tKey Not Found";
}
else
{
    h[index].key=-1;
    strcpy(h[index].name,"NULL");
    cout<<"\n\tKey is Deleted";
}
}
int HashFunction::find(long k)
{
    int i;
    for(i=0;i<10;i++)
    {
        if(h[i].key==k)
        {
            cout<<"\n\t"<<h[i].key<<" is Found at "<<i<<" Location With Name "<<h[i].name;
            return i;
        }
    }
    if(i==10)
    {
        return -1;
    }
}
void HashFunction::display()
{
    int i;
    cout<<"\n\t\tKey\t\tName";
    for(i=0;i<10;i++)
    {
        cout<<"\n\tth["<<i<<"]\t"<<h[i].key<<"\t\t"<<h[i].name;
    }
}
void HashFunction::insert()
{
    char ans,n[10],ntemp[10];
    long k,temp;
    int v,hi,cnt=0,flag=0,i;

```

```

do
{
if(cnt>=10)
{
cout<<"\n\tHash Table is FULL";
break;
}
cout<<"\n\tEnter a Telephone No: ";
cin>>k;
cout<<"\n\tEnter a Client Name: ";
cin>>n;
hi=k%10;// hash function
if(h[hi].key==-1)
{
h[hi].key=k;
strcpy(h[hi].name,n);
}
else
{
if(h[hi].key%10!=hi)
{
temp=h[hi].key;
strcpy(ntemp,h[hi].name);
h[hi].key=k;
strcpy(h[hi].name,n);
for(i=hi+1;i<10;i++)
{
if(h[i].key==-1)
{
h[i].key=temp;
strcpy(h[i].name,ntemp);
flag=1;
break;
}
}
for(i=0;i<hi && flag==0;i++)
{
if(h[i].key==-1)
{

```

```

        h[i].key=temp;
        strcpy(h[i].name,ntemp);
        break;
    }
}
}
else
{
for(i=hi+1;i<10;i++)
{
if(h[i].key==-1)
{
h[i].key=k;
strcpy(h[i].name,n);
flag=1;
break;
}
}
for(i=0;i<hi && flag==0;i++)
{
if(h[i].key==-1)
{
h[i].key=k;
strcpy(h[i].name,n);
break;
}
}
}
}
flag=0;
cnt++;
cout<<"\n\t..... Do You Want to Insert More Key: y/n";
cin>>ans;
}while(ans=='y'||ans=='Y');
}
int main()
{
long k;
int ch,index;

```

```

char ans;
HashFunction obj;
do
{
cout<<"\n\t***** Telephone (ADT) *****";
cout<<"\n\t1. Insert\n\t2. Display\n\t3. Find\n\t4. Delete\n\t5. Exit";
cout<<"\n\t.... Enter Your Choice: ";
cin>>ch;
switch(ch)
{
case 1: obj.insert();
break;
case 2: obj.display();
break;
case 3: cout<<"\n\tEnter a Key Which You Want to Search: ";
cin>>k;
index=obj.find(k);
if(index!=-1)
{
cout<<"\n\tKey Not Found";
}
break;
case 4: cout<<"\n\tEnter a Key Which You Want to Delete: ";
cin>>k;
obj.Delete(k);
break;
case 5:
break;
}
cout<<"\n\t.... Do You Want to Continue in Main Menu:y/n ";
cin>>ans;
}while(ans=='y'||ans=='Y');
}

```

OUTPUT:-

```

***** Telephone (ADT) *****
1. Insert
2. Display

```

3. Find

4. Delete

5. Exit

..... Enter Your Choice: 1

Enter a Telephone No: 2345

Enter a Client Name: Priya

..... Do You Want to Insert More Key: y/ny

Enter a Telephone No: 4567

Enter a Client Name: riya

..... Do You Want to Insert More Key: y/ny

Enter a Telephone No: 6789

Enter a Client Name: Tina

..... Do You Want to Insert More Key: y/ny

Enter a Telephone No: 5432

Enter a Client Name: Miya

..... Do You Want to Insert More Key: y/nn

..... Do You Want to Continue in Main Menu:y/n y

***** Telephone (ADT) *****

1. Insert

2. Display

3. Find

4. Delete

5. Exit

..... Enter Your Choice: 2

Key	Name
h[0] -1	NULL
h[1] -1	NULL
h[2] 5432	Miya
h[3] -1	NULL
h[4] -1	NULL
h[5] 2345	Priya
h[6] -1	NULL
h[7] 4567	riya
h[8] -1	NULL
h[9] 6789	Tina

..... Do You Want to Continue in Main Menu:y/n y

***** Telephone (ADT) *****

1. Insert
2. Display
3. Find
4. Delete
5. Exit

..... Enter Your Choice: 3

Enter a Key Which You Want to Search: 2345

2345 is Found at 5 Location With Name Priya

..... Do You Want to Continue in Main Menu:y/n y

***** Telephone (ADT) *****

1. Insert
2. Display
3. Find
4. Delete
5. Exit

..... Enter Your Choice: 4

Enter a Key Which You Want to Delete: 5432

5432 is Found at 2 Location With Name Miya

Key is Deleted

..... Do You Want to Continue in Main Menu:y/n y

***** Telephone (ADT) *****

- 1. Insert
- 2. Display
- 3. Find
- 4. Delete
- 5. Exit

..... Enter Your Choice: 2

Key	Name
h[0] -1	NULL
h[1] -1	NULL
h[2] -1	NULL
h[3] -1	NULL
h[4] -1	NULL
h[5] 2345	Priya
h[6] -1	NULL
h[7] 4567	riya
h[8] -1	NULL
h[9] 6789	Tina

..... Do You Want to Continue in Main Menu:y/n y

***** Telephone (ADT) *****

- 1. Insert
- 2. Display
- 3. Find
- 4. Delete
- 5. Exit

..... Enter Your Choice: 5

..... Do You Want to Continue in Main Menu:y/n