

/***Hashing** is an approach in which the timing complexity of insert, delete and search operations is not dependent on the number of elements present in the data structure. In fact, all the operation like insert, delete and search operation have **constant time complexity** i.e **O(1)** when hashing approach is used.*/

```
//Created By Ritwik Chandra Pandey
//On 4th Nov
//Implementation of Hash Tables
```

```
#include <stdio.h>
#define SIZE 10
```

```
int HashTable[SIZE];
int hash(int x) {
    return x % SIZE;
}
void insert(int x) {
    int index = hash(x);
    if(HashTable[index]==-1){
        HashTable[index] = x;

        printf("Successfully inserted.\n");
        return;
    }else{
        printf("Collision Occured.\n");
        return;}
}
void delete(int x) {
    int index = hash(x);
    if(HashTable[index]==x){

        HashTable[index] = -1;

        printf("Successfully deleted.\n");
        return;}else{
        printf("Element not found. So cannot delete the element.\n");
    }
}
void search(int x) {
```

```

    int index = hash(x);
    if(HashTable[index] == x){
        printf("Element found.\n");
        return;
    }else{
        printf("Element not found.\n");
        return;
    }
}

void print() {
    for(int i=0; i<SIZE;i++){
        if(HashTable[i]!=-1){
            printf("[%d]=>%d ",i,HashTable[i]);
        }
    }
    printf("\n");
}

int main() {
    int x, op, i = 0;
    for (i = 0; i < SIZE; i++)
        HashTable[i] = -1;
    while (1) {
        printf("1.Insert 2.Delete 3.Search 4.Print 5.Exit\n");
        printf("Enter your option : ");
        scanf("%d", &op);
        switch (op) {
            case 1:printf("Enter an element to be inserted : ");
                    scanf("%d", &x);
                    insert(x);
                    break;

            case 2:
                    printf("Enter an element to be deleted : ");
                    scanf("%d", &x);
                    delete(x);
                    break;

            case 3:
                    printf("Enter an element to be searched : ");

```

```
scanf("%d", &x);
search(x);
break;
case 4:
    print();
    break;
case 5:exit(0);
}
}
```