

//Created By Ritwik Chandra Pandey
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//Collision Resolution Techniques: Linear Probing

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#include <stdio.h>
#include <stdlib.h>

#define SIZE 10
int HashTable[SIZE];
int hash(int x) {
    return x % SIZE;
}
void insert(int x) {
    int index, start;
    index = hash(x);
    start = index;
    while(HashTable[index]!=-1){
        if(HashTable[index]==-1){
            break;
        }
        index = (index+1)%SIZE;
        if(index == start){
            printf("Hash table is full. So cannot insert the element.\n");
            return;
        }
    }
    HashTable[index] = x;
    printf("Successfully inserted.\n");
}
void delete(int x) {
    int index, start;
    index = hash(x);
    start = index;
    while(HashTable[index]!=x){
        if(HashTable[index]==x){
            break;
        }
        index = (index+1)%SIZE;
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        if(index==start){
            printf("Element not found. So cannot delete the element.\n");
            return;
        }
    }
    HashTable[index]=-1;
    printf("Successfully deleted.\n");
}

void search(int x) {
    int index, start;
    index = hash(x);
    start = index;
    while(HashTable[index]!=x){
        if(HashTable[index]==x){
            break;
        }
        index = (index+1)%SIZE;
        if(index==start){
            printf("Element not found.\n");
            return;
        }
    }
    printf("Element found.\n");
}

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

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int main() {
    int x, op, i = 0;
    for (i = 0; i < SIZE; i++)

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        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);
    }
}
}

```