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#include <stdio.h>
#include <string.h>
#include <stdlib.h>
#define SIZE 20
struct node {
    int data;
    int key;
};
typedef struct node Node;
Node *getnode(){
    return (Node *)malloc(sizeof(Node));
}
Node* hashArray[SIZE],*dummyItem,*item;
int hashCode(int key) {
    return key % SIZE;
}
Node *search(int key) {
    int hashIndex = hashCode(key);
    while(hashArray[hashIndex] != NULL) {
        if(hashArray[hashIndex]->key == key)
            return hashArray[hashIndex];
        ++hashIndex;
        hashIndex %= SIZE;
    }
    return NULL;
}
void insert(int key,int data) {
    Node *item = getnode();
    item->data = data;
    item->key = key;
    int hashIndex = hashCode(key);
    while(hashArray[hashIndex] != NULL && hashArray[hashIndex]->key != -1) {
        ++hashIndex;
        hashIndex %= SIZE;
    }
    hashArray[hashIndex] = item;
}
Node* delete(Node* item) {
    int key = item->key;
    int hashIndex = hashCode(key);
    while(hashArray[hashIndex] != NULL) {
        if(hashArray[hashIndex]->key == key) {
            Node* temp = hashArray[hashIndex];
            hashArray[hashIndex] = dummyItem;
            return temp;
        }
        ++hashIndex;
        hashIndex %= SIZE;
    }
    return NULL;
}

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

int main() {
    dummyItem = getnode();
    dummyItem->data = -1;
    dummyItem->key = -1;
    insert(1, 20);
    insert(2, 70);
    insert(42, 80);
    insert(4, 25);
    insert(12, 44);
    insert(14, 32);
    insert(17, 11);
    insert(13, 78);
    insert(37, 97);
    display();
    item = search(37);
    if(item != NULL) {
        printf("Element found: %d\n", item->data);
    }
    else {
        printf("Element not found\n");
    }
    delete(item);
    item = search(37);
    if(item != NULL) {
        printf("Element found: %d\n", item->data);
    }
    else {
        printf("Element not found\n");
    }
}

```

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4125@jtl-23:~Programs/Ex7$ gcc hashtable.c -o ht
4125@jtl-23:~Programs/Ex7$ ./ht
(1,20) (2,70) (42,80) (4,25) (12,44) (13,78) (14,32) (17,11) (37,97)
Element found: 97
Element not found
4125@jtl-23:~Programs/Ex7$ █

```