

## PROGRAM 15:

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#include <stdio.h>

#include <string.h>

#include <stdlib.h>

#include <stdbool.h>

#define SIZE 20

struct Dataltem {

    int data;

    int key;

};

struct Dataltem* hashArray[SIZE];

struct Dataltem* dummyItem;

struct Dataltem* item;

int hashCode(int key) {

    return key % SIZE;

}

struct Dataltem *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) {

    struct Dataltem *item = (struct Dataltem*) malloc(sizeof(struct Dataltem));

    item->data = data;

    item->key = key;
```

```

int hashIndex = hashCode(key);
while(hashArray[hashIndex] != NULL && hashArray[hashIndex]->key != -
1) {
    ++hashIndex;
    hashIndex %= SIZE;
}
hashArray[hashIndex] = item;
}

struct Dataltem* delete(struct Dataltem* item) {
    int key = item->key;
    int hashIndex = hashCode(key);
    while(hashArray[hashIndex] != NULL) {
        if(hashArray[hashIndex]->key == key) {
            struct Dataltem* temp = hashArray[hashIndex];
            hashArray[hashIndex] = dummyItem;
            return temp;
        }
        ++hashIndex;
        hashIndex %= SIZE;
    }

    return NULL;
}

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

```

```

printf("\n");
}
int main() {
    dummyItem = (struct DataItem*) malloc(sizeof(struct DataItem));
    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");
    }
}

```

# OUTPUT:

```
C:\Users\A.V.NAGA KAVYA\Documents\ds15.exe
-- (1,20) (2,70) (42,80) (4,25) -- -- -- -- -- (12,44) (13,78) (14,32) -- -- (17,11) (37,97) --
Element found: 97
Element not found

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Process exited after 0.01337 seconds with return value 0
Press any key to continue . . .
```