

# Rajalakshmi Engineering College

Name: Rithesh Madhav S  
Email: 240701428@rajalakshmi.edu.in  
Roll no: 240701428  
Phone: 9884267696  
Branch: REC  
Department: I CSE FD  
Batch: 2028  
Degree: B.E - CSE

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## NeoColab\_REC\_CS23231\_DATA STRUCTURES

### REC\_DS using C\_Week 7\_COD\_Question 3

Attempt : 1  
Total Mark : 10  
Marks Obtained : 10

#### Section 1 : Coding

##### 1. Problem Statement

In a messaging application, users maintain a contact list with names and corresponding phone numbers. Develop a program to manage this contact list using a dictionary implemented with hashing.

The program allows users to add contacts, delete contacts, and check if a specific contact exists. Additionally, it provides an option to print the contact list in the order of insertion.

##### ***Input Format***

The first line consists of an integer  $n$ , representing the number of contact pairs to be inserted.

Each of the next  $n$  lines consists of two strings separated by a space: the name of the contact (key) and the corresponding phone number (value).

The last line contains a string *k*, representing the contact to be checked or removed.

### **Output Format**

If the given contact exists in the dictionary:

1. The first line prints "The given key is removed!" after removing it.
2. The next *n* - 1 lines print the updated contact list in the format: "Key: X; Value: Y" where X represents the contact's name and Y represents the phone number.

If the given contact does not exist in the dictionary:

1. The first line prints "The given key is not found!".
2. The next *n* lines print the original contact list in the format: "Key: X; Value: Y" where X represents the contact's name and Y represents the phone number.

Refer to the sample outputs for the formatting specifications.

### **Sample Test Case**

Input: 3

Alice 1234567890

Bob 9876543210

Charlie 4567890123

Bob

Output: The given key is removed!

Key: Alice; Value: 1234567890

Key: Charlie; Value: 4567890123

### **Answer**

```
void insertKeyValuePair(Dictionary *dict, const char *key, const char *value) {  
    // Check if we need to resize  
    if (dict->size == dict->capacity) {  
        dict->capacity *= 2;  
        dict->pairs = (KeyValuePair *)realloc(dict->pairs, dict->capacity *  
        sizeof(KeyValuePair));
```

```

    }
    // Add the new pair at the end
    strcpy(dict->pairs[dict->size].key, key);
    strcpy(dict->pairs[dict->size].value, value);
    dict->size++;
}

void removeKeyValuePair(Dictionary *dict, const char *key) {
    for (int i = 0; i < dict->size; i++) {
        if (strcmp(dict->pairs[i].key, key) == 0) {
            // Shift all elements after i one position left
            for (int j = i; j < dict->size - 1; j++) {
                strcpy(dict->pairs[j].key, dict->pairs[j+1].key);
                strcpy(dict->pairs[j].value, dict->pairs[j+1].value);
            }
            dict->size--;
            return;
        }
    }
}

int doesKeyExist(Dictionary *dict, const char *key) {
    for (int i = 0; i < dict->size; i++) {
        if (strcmp(dict->pairs[i].key, key) == 0) {
            return 1;
        }
    }
    return 0;
}

void printDictionary(Dictionary *dict) {
    for (int i = 0; i < dict->size; i++) {
        printf("Key: %s; Value: %s\n", dict->pairs[i].key, dict->pairs[i].value);
    }
}

```

**Status :** Correct

**Marks :** 10/10