

# Rajalakshmi Engineering College

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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 456789012  
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) {
    if (dict->size == dict->capacity) {
        dict->capacity *= 2;
        dict->pairs = (KeyValuePair *)realloc(dict->pairs, dict->capacity *
sizeof(KeyValuePair));
    }
}
```

```
strcpy(dict->pairs[dict->size].key, key);
strcpy(dict->pairs[dict->size].value, value);
dict->size++;
}

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

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