Rajalakshmi Engineering College

Name: ARJUN K
Email: 241501021@rajalakshmi.edu.in
Roll no: 241501021
Phone: 9944506466
Branch: REC
Department: I AI & ML FA
Batch: 2028
Degree: B.E - AI & ML

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NeoColab_REC_CS23231_DATA STRUCTURES

REC_DS using C_Week 7_COD_Question 4

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Develop a program using hashing to manage a fruit contest where each fruit is assigned a unique name and a corresponding score. The program should allow the organizer to input the number of fruits and their names with scores.

Then, it should enable them to check if a specific fruit, identified by its name, is part of the contest. If the fruit is registered, the program should display its score; otherwise, it should indicate that it is not included in the contest.

Input Format

The first line consists of an integer N, representing the number of fruits in the contest.

The following N lines contain a string K and an integer V, separated by a space, representing the name and score of each fruit in the contest.

The last line consists of a string T, representing the name of the fruit to search for.

Output Format

If T exists in the dictionary, print "Key "T" exists in the dictionary.".

If T does not exist in the dictionary, print "Key "T" does not exist in the dictionary.".

Refer to the sample outputs for the formatting specifications.

Sample Test Case

Input: 2
banana 2
apple 1
Banana
Output: Key "Banana" does not exist in the dictionary.

Answer

```
// You are using GCC
#include <stdio.h>
#include <string.h>
#include <stdlib.h>

#define SIZE 20

typedef struct {
    char name[21];
    int score;
    int isOccupied;
} Fruit;

int hash(char *key) {
    int hashVal = 0;
    for (int i = 0; key[i] != '\0'; i++) {
```

```
        hashVal = (hashVal * 31 + key[i]) % SIZE;
    }
    return hashVal;
}

void insert(Fruit table[], char *key, int value) {
    int idx = hash(key);
    while (table[idx].isOccupied) {
        idx = (idx + 1) % SIZE;
    }
    strcpy(table[idx].name, key);
    table[idx].score = value;
    table[idx].isOccupied = 1;
}

int search(Fruit table[], char *key, int *value) {
    int idx = hash(key);
    int startIdx = idx;
    while (table[idx].isOccupied) {
        if (strcmp(table[idx].name, key) == 0) {
            *value = table[idx].score;
            return 1;
        }
        idx = (idx + 1) % SIZE;
        if (idx == startIdx) break;
    }
    return 0;
}

int main() {
    int N;
    scanf("%d", &N);

    Fruit table[SIZE] = {0};

    for (int i = 0; i < N; i++) {
        char name[21];
        int score;
        scanf("%s %d", name, &score);
        insert(table, name, score);
    }
```

```
    char searchKey[21];
    scanf("%s", searchKey);

    int foundScore;
    if (search(table, searchKey, &foundScore)) {
        printf("Key \"%s\" exists in the dictionary.\n", searchKey);
    } else {
        printf("Key \"%s\" does not exist in the dictionary.\n", searchKey);
    }

    return 0;
}
```

Status : Correct ***Marks : 10/10***