Rajalakshmi Engineering College

Name: Naveed Sheriff
Email: 240701348@rajalakshmi.edu.in
Roll no: 240701348
Phone: 9025573780
Branch: REC
Department: I CSE FD
Batch: 2028
Degree: B.E - CSE

Scan to verify results

NeoColab_REC_CS23231_DATA STRUCTURES

REC_DS using C_Week 5_COD_Question 1

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

John is learning about Binary Search Trees (BST) in his computer science class. He wants to create a program that allows users to delete a node with a given value from a BST and print the remaining nodes using an in-order traversal.

Implement a function to help him delete a node with a given value from a BST.

Input Format

The first line of input consists of an integer N, representing the number of nodes in the BST.

The second line consists of N space-separated integers, representing the values of the BST nodes.

The third line consists of an integer V, which is the value to delete from the BST.

Output Format

The output prints the space-separated values in the BST in an in-order traversal, after the deletion of the specified value.

If the specified value is not available in the tree, print the given input values in-order traversal.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 5
10 5 15 2 7
15

Output: 2 5 7 10

Answer

```
#include <stdio.h>
#include <stdlib.h>

struct TreeNode {
    int data;
    struct TreeNode* left;
    struct TreeNode* right;
};

struct TreeNode* createNode(int key) {
    struct TreeNode* newNode = (struct TreeNode*)malloc(sizeof(struct
TreeNode));
    newNode->data = key;
    newNode->left = newNode->right = NULL;
    return newNode;
}

// You are using GCC
struct TreeNode* insert(struct TreeNode* root, int key) {
    //Type your code here
```

```
    struct TreeNode*newnode = (struct TreeNode*)malloc(sizeof(struct
TreeNode));
    if(root == NULL)
    {
        newnode->data = key;
        newnode->left = NULL;
        newnode->right = NULL;
        root = newnode;
    }
    else if(key < root->data)
        root->left = insert(root->left , key);
    else if(key > root->data)
        root->right = insert(root->right , key);
    return root;
}

struct TreeNode* findMin(struct TreeNode* root) {
    //Type your code here
    if(root != NULL)
    {
        while(root->left != NULL)
            root = root->left;
    }
    return root;
}

struct TreeNode* deleteNode(struct TreeNode* root, int key) {
    //Type your code here
    if(root == NULL)
        return root;
    else if(key < root->data)
        root->left = deleteNode(root->left , key);
    else if(key > root->data)
        root->right = deleteNode(root->right , key);
    /*else if(root->left && root->right)
    {
        temp = findMin(root->right);
        root->data = temp->data;
        root->right = deleteNode(root->right , root->data);
    }*/
    else
    {
```

```
        if(root->left == NULL)
        {
        struct TreeNode*temp = root->right;
        free(root);
        return temp;
        }
        else if(root->right == NULL)
        {
            struct TreeNode*temp = root->left;
            free(root);
            return temp;
        }

        struct TreeNode*temp = findMin(root->right);
        root->data = temp->data;
        root->right = deleteNode(root->right , temp->data);
    }
    return root;
}

void inorderTraversal(struct TreeNode* root) {
    //Type your code here
    if(root != NULL)
    {
        inorderTraversal(root->left);
        printf("%d ",root->data);
        inorderTraversal(root->right);
    }
}
int main()
{
    int N, rootValue, V;
    scanf("%d", &N);
    struct TreeNode* root = NULL;
    for (int i = 0; i < N; i++) {
        int key;
        scanf("%d", &key);
        if (i == 0) rootValue = key;
        root = insert(root, key);
    }
    scanf("%d", &V);
    root = deleteNode(root, V);
```

```
    inorderTraversal(root);
    return 0;
}
```

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