

## **NeoColab\_REC\_CS23231\_DATA STRUCTURES**

### **REC\_DS using C\_Week 5\_COD\_Question 4**

Attempt : 1

Total Mark : 10

Marks Obtained : 10

#### **Section 1 : Coding**

##### **1. Problem Statement**

John, a computer science student, is learning about binary search trees (BST) and their properties. He decides to write a program to create a BST, display it in post-order traversal, and find the minimum value present in the tree.

Help him by implementing the program.

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

The first line of input consists of an integer N, representing the number of elements to insert into the BST.

The second line consists of N space-separated integers data, which is the data to be inserted into the BST.

### ***Output Format***

The first line of output prints the space-separated elements of the BST in post-order traversal.

The second line prints the minimum value found in the BST.

Refer to the sample output for formatting specifications.

### ***Sample Test Case***

Input: 3

5 10 15

Output: 15 10 5

The minimum value in the BST is: 5

### ***Answer***

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

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

```
struct Node {  
    int data;  
    struct Node* left;  
    struct Node* right;  
};
```

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

```
struct Node* insert(struct Node* root, int data) {  
    if (root == NULL) {  
        return createNode(data);  
    }  
    if (data < root->data) {  
        root->left = insert(root->left, data);  
    } else {  
        root->right = insert(root->right, data);  
    }
```

```

    }
    return root;
}

void displayTreePostOrder(struct Node* root) {
    if (root == NULL) {
        return;
    }
    displayTreePostOrder(root->left);
    displayTreePostOrder(root->right);
    printf("%d ", root->data);
}

int findMinValue(struct Node* root) {
    if (root == NULL) {
        return -1;
    }
    struct Node* current = root;
    while (current->left != NULL) {
        current = current->left;
    }
    return current->data;
}

int main() {
    struct Node* root = NULL;
    int n, data;
    scanf("%d", &n);

    for (int i = 0; i < n; i++) {
        scanf("%d", &data);
        root = insert(root, data);
    }

    displayTreePostOrder(root);
    printf("\n");

    int minValue = findMinValue(root);
    printf("The minimum value in the BST is: %d", minValue);

    return 0;
}

```

**Status :** Correct

**Marks :** 10/10