

# Rajalakshmi Engineering College

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## NeoColab\_REC\_CS23231\_DATA STRUCTURES

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

Attempt : 1  
Total Mark : 10  
Marks Obtained : 10

#### Section 1 : Coding

##### 1. Problem Statement

In his computer science class, John is learning about Binary Search Trees (BST). He wants to build a BST and find the maximum value in the tree.

Help him by writing a program to insert nodes into a BST and find the maximum value in the tree.

##### ***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 nodes to insert into the BST.

##### ***Output Format***

The output prints the maximum value in the BST.

Refer to the sample output for formatting specifications.

### **Sample Test Case**

Input: 5  
10 5 15 2 7

Output: 15

### **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;
}

struct TreeNode* insert(struct TreeNode* root, int key) {
    if (root == NULL) return createNode(key);

    if (key < root->data)
        root->left = insert(root->left, key);
    else
        root->right = insert(root->right, key);

    return root;
}

// Find maximum value (rightmost node)
```

```
int findMax(struct TreeNode* root) {  
    if (root == NULL) {  
        printf("Tree is empty.\n");  
        return -1;  
    }  
  
    while (root->right != NULL) {  
        root = root->right;  
    }  
  
    return root->data;  
}
```

```
int main() {  
    int N, rootValue;  
    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);  
    }  
  
    int maxVal = findMax(root);  
    if (maxVal != -1) {  
        printf("%d", maxVal);  
    }  
  
    return 0;  
}
```

**Status :** Correct

**Marks :** 10/10