

# Rajalakshmi Engineering College

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Batch: 2028

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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){  
        root=createNode(key);  
    }  
    else if(key<root->data){  
        root->left=insert(root->left,key);  
    }  
    else if(key>root->data){  
        root->right=insert(root->right,key);  
    }  
    return root;  
}
```

```
int findMax(struct TreeNode* root) {
    if(root==NULL){
        return 0;
    }
    else if(root->right==NULL){
        return root->data;
    }
    else{
        return findMax(root->right);
    }
}

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