

# 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;  
}
```

```
typedef struct TreeNode Node;  
struct TreeNode* insert(struct TreeNode* root, int key) {  
    Node* Newnode=(Node*)malloc(sizeof(Node));  
    if(root==NULL){  
        Newnode->data=key;  
        Newnode->left=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;
    }

    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