

# Rajalakshmi Engineering College

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## NeoColab\_REC\_CS23231\_DATA STRUCTURES

### REC\_DS using C\_Week 5\_COD\_Question 2

Attempt : 1  
Total Mark : 10  
Marks Obtained : 10

#### Section 1 : Coding

##### 1. Problem Statement

Mike is learning about Binary Search Trees (BSTs) and wants to implement various operations on them. He wants to write a basic program for creating a BST, inserting nodes, and printing the tree in the pre-order traversal.

Write a program to help him solve this program.

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

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

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

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

The output prints the space-separated values of the BST in the pre-order traversal.

Refer to the sample output for formatting specifications.

### **Sample Test Case**

Input: 5

3 1 5 2 4

Output: 3 1 2 5 4

### **Answer**

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

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

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

```
typedef struct Node Node;
struct Node* insert(struct Node* root, int value) {
    Node* newn=(Node*)malloc(sizeof(Node));
    if(root==NULL){
        newn->data=value;
        newn->right=NULL;
        newn->left=NULL;
        root=newn;
    }
    else if(value<root->data){
        root->left=insert(root->left,value);
    }
}
```

```
        else if(value>root->data){
            root->right=insert(root->right,value);
        }
        return root;
    }
}
```

```
void printPreorder(struct Node* node) {
    if(node!=NULL){
        printf("%d",node->data);
        printPreorder(node->left);
        printPreorder(node->right);
    }
}
```

```
int main() {
    struct Node* root = NULL;

    int n;
    scanf("%d", &n);

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

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

**Status :** Correct

**Marks :** 10/10