

# Rajalakshmi Engineering College

Name: arul santhosh X  
Email: 241501022@rajalakshmi.edu.in  
Roll no: 241501022  
Phone: 9361955774  
Branch: REC  
Department: I AIML AD  
Batch: 2028  
Degree: B.E - AI & ML

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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;
}
```

```
struct Node* insert(struct Node* root, int value) {
    //Type your code here
    if (root == NULL)
        return createNode(value);

    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) {
```

```
//Type your code here
```

```
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