8(a)_Write a program a) To construct a binary Search tree. b) To traverse the tree using all the methods i.e., in-order, preorder and post order c) To display the elements in the tree.

```
#include <stdio.h>

#include<stdlib.h>


// Structure of BST node

struct node {

   int data;

   struct node *left;

   struct node *right;

};


// Create a new node

struct node* createNode(int value) {

   struct node *newnode = (struct node*)malloc(sizeof(struct node));

   newnode->data = value;

   newnode->left = NULL;

   newnode->right = NULL;

   return newnode;

}


// Insert a node into BST

struct node* insert(struct node *root, int value) {

   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;
}

// In-order traversal
void inorder(struct node *root) {
    if (root != NULL) {
        inorder(root->left);
        printf("%d ", root->data);
        inorder(root->right);
    }
}

// Pre-order traversal
void preorder(struct node *root) {
    if (root != NULL) {
        printf("%d ", root->data);
        preorder(root->left);
        preorder(root->right);
    }
}

// Post-order traversal
void postorder(struct node *root) {
    if (root != NULL) {
        postorder(root->left);
```

```
        postorder(root->right);
        printf("%d ", root->data);
    }
}

// Main function
int main() {
    struct node *root = NULL;
    int n, value, i;

    printf("Enter number of nodes: ");
    scanf("%d", &n);

    printf("Enter the elements:\n");
    for (i = 0; i < n; i++) {
        scanf("%d", &value);
        root = insert(root, value);
    }

    printf("\nIn-order Traversal: ");
    inorder(root);

    printf("\nPre-order Traversal: ");
    preorder(root);

    printf("\nPost-order Traversal: ");
    postorder(root);
```

```
    return 0;

}
```

```
Enter number of nodes: 5
Enter the elements:
50
30
70
20
40

In-order Traversal: 20 30 40 50 70
Pre-order Traversal: 50 30 20 40 70
Post-order Traversal: 20 40 30 70 50
Process returned 0 (0x0)   execution time : 26.178 s
Press any key to continue.
```