

**/\* 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>

/* Definition 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);  
    }  
}  
  
int main() {  
    struct node* root = NULL;  
    int n, i, value;  
  
    printf("Enter number of elements: ");  
    scanf("%d", &n);  
  
    printf("Enter elements:\n");  
    for (i = 0; i < n; i++) {
```

```
    scanf("%d", &value);
    root = insert(root, value);
}

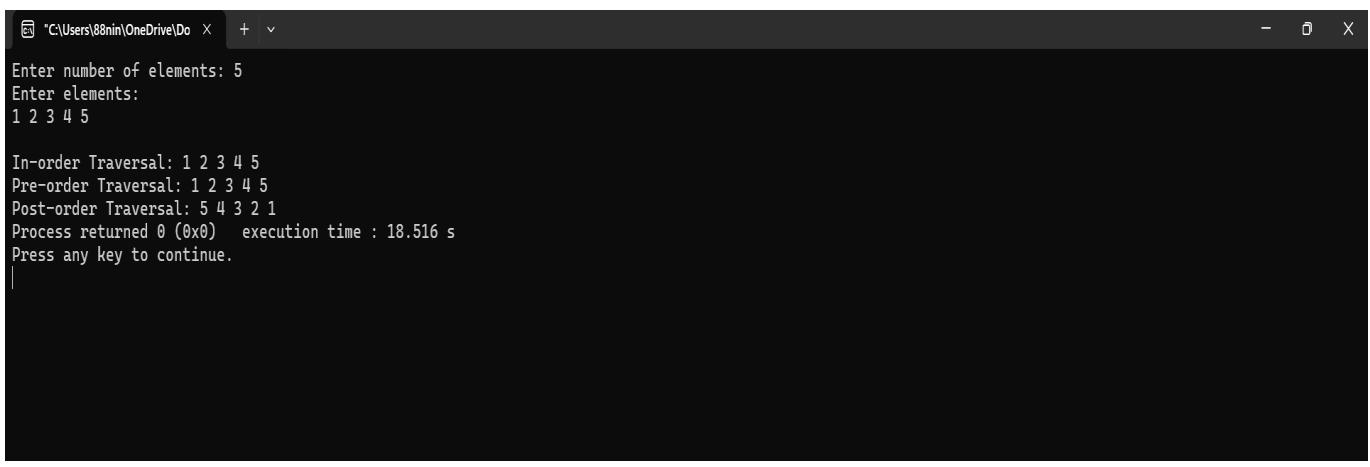
printf("\nIn-order Traversal: ");
inorder(root);

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

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

return 0;
}
```

## OUTPUT:-



The screenshot shows a terminal window with the following output:

```
"C:\Users\88nin\OneDrive\Do" + 
Enter number of elements: 5
Enter elements:
1 2 3 4 5

In-order Traversal: 1 2 3 4 5
Pre-order Traversal: 1 2 3 4 5
Post-order Traversal: 5 4 3 2 1
Process returned 0 (0x0)  execution time : 18.516 s
Press any key to continue.
```