8) 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.

```c
#include <stdio.h>
#include <stdlib.h>
typedef struct node{
    int data;
    struct node *right;
    struct node *left;
}Node;

Node *new_node (int x)
{
    Node *temp=(Node*)malloc(sizeof (Node));
    temp->data=x;
    temp->left=NULL;
    temp->right=NULL;
    return temp;
}
Node *insert(Node *root,int x)
{
    if(root==NULL)
    {
        return new_node(x);
    }
    else if (x > root->data)
    {
        root->right=insert(root->right,x);
    }
    else if(x < root->data)
    {
        root->left=insert(root->left,x);
    }
    return root;
}

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

```c
}
void preorder(Node* root)
{
    if(root!=NULL)
    {
        printf("%d ",root->data);
        preorder(root->left);
        preorder(root->right);
    }

}
void postorder(Node* root)
{
    if(root!=NULL)
    {
        postorder(root->left);
        postorder(root->right);
        printf("%d ",root->data);
    }
}

void display(Node * root)
{
    if(root!=NULL)
    {
        display(root->left);
        printf("%d ", root->data);
        display(root->right);
    }
}

void main()
{
    Node *root=NULL;
    root=new_node(100);
    insert(root,20);
    insert(root,200);
    insert(root,10);
    insert(root,30);
    insert(root,150);
    insert(root,300);


    printf("the tree in inorder :");
    inorder(root);
    printf("\n");
    printf("the tree in preorder :");
    preorder(root);
    printf("\n");
    printf("the tree in postorder :");
    postorder(root);
```

```
    printf("\n");
    printf("the tree will be:");
    display(root);

}
```

```
the tree in inorder :10 20 30 100 150 200 300
the tree in preorder :100 20 10 30 200 150 300
the tree in postorder :10 30 20 150 300 200 100
the tree will be:10 20 30 100 150 200 300
Process returned 0 (0x0)   execution time : 2.124 s
Press any key to continue.
```