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DS Practical 6 (binary search tree)

Code:

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

struct node{
    int data;
    struct node *left;
    struct node *right;
};

struct node* insertNode(struct node*root, int value) {
    struct node* newNode = (struct node*)malloc(sizeof(struct node));
    newNode->data = value;
    newNode->left = NULL;
    newNode->right = NULL;

    if(root == NULL){
        root = newNode;
        return root;
    }

    struct node* prev=NULL, *curr=root;

    while(curr!=NULL){
        prev=curr;
        if(value<curr->data){
            curr=curr->left;
        }else{
            curr=curr->right;
        }
    }

    if(value < prev->data){
        prev->left=newNode;
    }else{
```

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        prev->right=newNode;
    }
    return root;
}

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

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

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

int countLeafnode(struct node *root){
    if(root==NULL){
        return 0;
    }
    if(root->left==NULL && root->right==NULL){
        return 1;
    }
    return countLeafnode(root->left)+countLeafnode(root->right);
}

int main(){
    struct node* root=NULL;
    int n, value;
    printf("enter number of node: ");

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scanf("%d", &n);
printf("enter values of node: \n");
for(int i=0; i<n; i++){
    scanf("%d", &value);
    root=insertNode(root, value);
}
printf("Inorder Traversal: ");
inorder(root);
printf("\nPreorder Traversal: ");
preorder(root);
printf("\nPostorder Traversal: ");
postorder(root);
int leafCount = countLeafnode(root);
printf("\nNumber of leaf nodes: %d", leafCount);
printf("\n");
return 0;
}

```

Code:

```

PROBLEMS  DEBUG CONSOLE  TERMINAL  PORTS  COMMENTS

PS C:\Users\cse\output> & .\'tree.exe'
enter number of node: 7
enter number of node: 7
enter values of node:
2
3
5
87
1
6
9
Inorder Traversal: 1 2 3 5 6 9 87
Preorder Traversal: 2 1 3 5 87 6 9
Postorder Traversal: 1 9 6 87 5 3 2
Number of leaf nodes: 2
PS C:\Users\cse\output> 

```