231501058 CS23231 – D a t a S t r u c t u r e s

**Ex. No.: 8**

**Tree Traversal**

**Date: 17/5/24**

**Write a C prog ram to imple ment a Binary tree and perform the following tree trave rsal operation .**

1. **Inorder Traversal**
2. **Preorder Traversal**
3. **Postorder Traversal**

**Algorithm:**

#include <stdio.h>

#include <malloc.h>

struct node {

int data;

struct node\* left;

struct node\* right;

};

struct node\* root = NULL;

struct node\* newnode;

void insert(int ele) {

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

newnode->data = ele;

newnode->left = newnode->right = NULL;

if (root == NULL) {

root = newnode;

} else {

struct node\* current = root;

struct node\* parent = NULL;

while (1) {

parent = current;

if (ele < parent->data) {

current = current->left;

if (current == NULL) {

parent->left = newnode;

return;

}

} else {

current = current->right;

if (current == NULL) {

parent->right = newnode;

return;

}

}



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}

}

}

void inorder(struct node\* t) {

if (root == NULL) return;

if (t != NULL) {

inorder(t->left);

printf("%d ", t->data);

inorder(t->right);

}

}

void preorder(struct node\* t) {

if (root == NULL) return;

if (t != NULL) {

printf("%d ", t->data);

preorder(t->left);

preorder(t->right);

}

}

void postorder(struct node\* t) {

if (root == NULL) return;

if (t != NULL) {

postorder(t->left);

postorder(t->right);

printf("%d ", t->data);

}

}

int main() {

insert(5);

insert(3);

insert(7);

insert(2);

insert(4);

insert(6);

insert(8);

printf("Inorder Traversal: ");

inorder(root);

printf("\n");

printf("Preorder Traversal: ");

preorder(root);

printf("\n");

printf("Postorder Traversal: ");

postorder(root);

printf("\n");

return 0;

}



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**OUTPUT**



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