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LAB 10: 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>

struct tnode {

int data;

struct tnode \*left, \*right;

};

struct tnode \*root = NULL;

struct tnode \* createNode(int data) {

struct tnode \*newNode;

newNode = (struct tnode \*) malloc(sizeof(struct tnode));

newNode->data = data;

newNode->left = NULL;

newNode->right = NULL;

return (newNode);

}

void insertion(struct tnode \*\*node, int data) {

if (!\*node) {

\*node = createNode(data);

} else if (data < (\*node)->data) {

insertion(&(\*node)->left, data);

} else if (data > (\*node)->data) {

insertion(&(\*node)->right, data);

}

}

void inOrder(struct tnode \*node) {

if (node) {

inOrder(node->left);

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

inOrder(node->right);

}

return;

}

void preOrder(struct tnode \*node) {

if (node) {

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

preOrder(node->left);

preOrder(node->right);

}

return;

}

void postOrder(struct tnode \*node) {

if (node) {

postOrder(node->left);

postOrder(node->right);

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

}

return;

}

int main() {

int data, ch;

while (1) {

printf("\n\*\*Binary Tree traversal operations\*\*\n");

printf("\n1. Insertion\n2. Inorder\n");

printf("3. Preorder\n4. Postorder\n");

printf("5. Exit\nEnter your choice:");

scanf("%d", &ch);

switch (ch) {

case 1:

printf("Enter data:");

scanf("%d", &data);

insertion(&root, data);

break;

case 2: printf("Inorder traversal:");

inOrder(root);

break;

case 3: printf("Preorder traversal:");

preOrder(root);

break;

case 4: printf("Postorder traversal:");

postOrder(root);

break;

case 5:

exit(0);

default:

printf("Wrong choice. Please re-enter\n");

break;

}

}

return 0;

}

OUTPUT:







