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Roll No: 71

Experiment no: 6

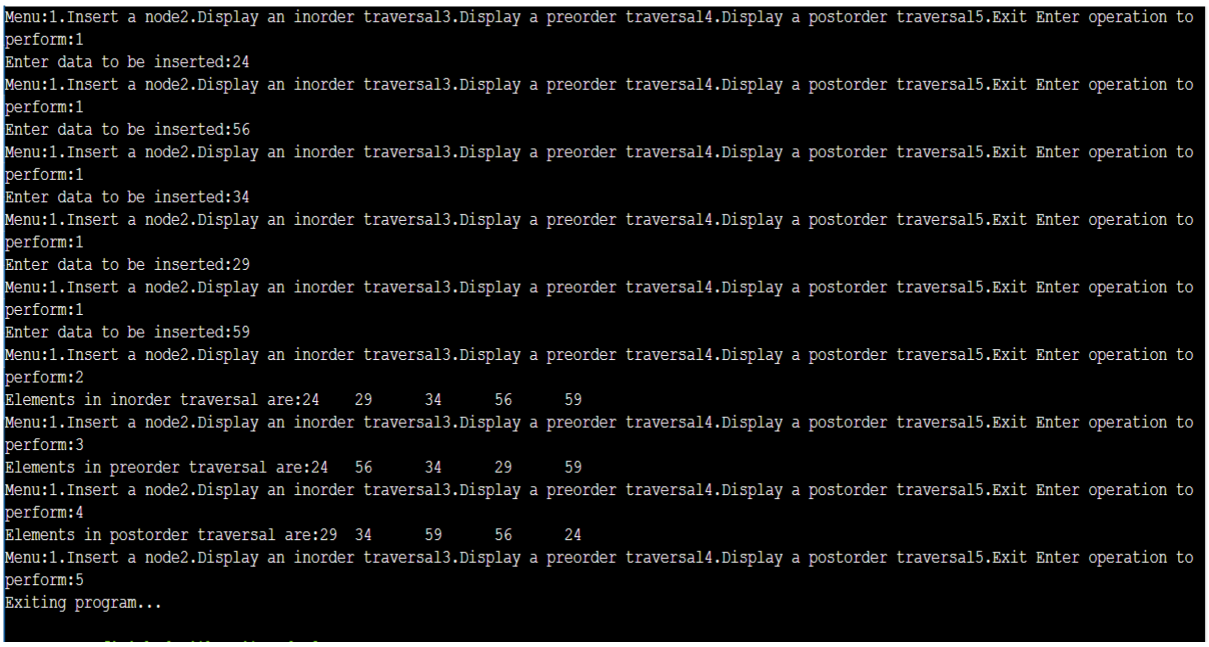
Code:

```
#include<stdio.h>
#include<stdlib.h>
#include<malloc.h>
struct node{
int data;
struct node *left;
struct node *right;
};
struct node *tree;
void create(struct node *);
struct node *insert(struct node *,int);
void inorder(struct node *);
void preorder(struct node *);
void postorder(struct node *);
void main(){
int choice,x;
create(tree);
do{
printf("Menu:1.Insert a node2.Display an inorder traversal3.Display a preorder traversal4.Display a
postorder traversal5.Exit Enter operation to perform:");
scanf("%d",&choice);
switch(choice){
case 1: printf("Enter data to be inserted:");
scanf("%d",&x);
tree = insert(tree,x);
break;
case 2: printf("Elements in inorder traversal are:");
inorder(tree);
printf("\n");
break;
case 3: printf("Elements in preorder traversal are:");
preorder(tree);
printf("\n");
break;
case 4: printf("Elements in postorder traversal are:");
postorder(tree);
printf("\n");
break;
case 5: printf("Exiting program...");
break;
default:printf("Invalid input!");
}
}while(choice!=5);
}
void create(struct node *tree){
tree = NULL;
}
struct node *insert(struct node *tree,int x){
struct node *p,*temp,*root;
p = (struct node *) malloc (sizeof(struct node));
p->data = x;
p->left = NULL;
p->right = NULL;
if(tree == NULL){
tree = p;
tree->left = NULL;
tree->right = NULL;
```

```
}else{
root = NULL;
temp = tree;
while(temp != NULL){
root = temp;
if(x<temp->data){
temp = temp->left;
}else{
temp = temp->right;
}
}
if(x<root->data){
root->left = p;
}else{
root->right = p;
}
}
return tree;
}
void inorder(struct node *tree){
if(tree!=NULL){
inorder(tree->left);
printf("%d\t",tree->data);
inorder(tree->right);
}
}
void preorder(struct node *tree){
if(tree!=NULL){
printf("%d\t",tree->data);
preorder(tree->left);
preorder(tree->right);
```

```
}

}

void postorder(struct node *tree){

if(tree!=NULL){

postorder(tree->left);

postorder(tree->right);

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

}

}
```

Output:



```
Menu:1.Insert a node2.Display an inorder traversal3.Display a preorder traversal4.Display a postorder traversal5.Exit Enter operation to
perform:1
Enter data to be inserted:24
Menu:1.Insert a node2.Display an inorder traversal3.Display a preorder traversal4.Display a postorder traversal5.Exit Enter operation to
perform:1
Enter data to be inserted:56
Menu:1.Insert a node2.Display an inorder traversal3.Display a preorder traversal4.Display a postorder traversal5.Exit Enter operation to
perform:1
Enter data to be inserted:34
Menu:1.Insert a node2.Display an inorder traversal3.Display a preorder traversal4.Display a postorder traversal5.Exit Enter operation to
perform:1
Enter data to be inserted:29
Menu:1.Insert a node2.Display an inorder traversal3.Display a preorder traversal4.Display a postorder traversal5.Exit Enter operation to
perform:1
Enter data to be inserted:59
Menu:1.Insert a node2.Display an inorder traversal3.Display a preorder traversal4.Display a postorder traversal5.Exit Enter operation to
perform:2
Elements in inorder traversal are:24    29      34      56      59
Menu:1.Insert a node2.Display an inorder traversal3.Display a preorder traversal4.Display a postorder traversal5.Exit Enter operation to
perform:3
Elements in preorder traversal are:24   56      34      29      59
Menu:1.Insert a node2.Display an inorder traversal3.Display a preorder traversal4.Display a postorder traversal5.Exit Enter operation to
perform:4
Elements in postorder traversal are:29  34      59      56      24
Menu:1.Insert a node2.Display an inorder traversal3.Display a preorder traversal4.Display a postorder traversal5.Exit Enter operation to
perform:5
Exiting program...
```