**Name:- Vaishali Bharat Sapkal**

**Roll No:130**

**Assignment No.:- 2.2**

**Assignment name:- Implementation of program based on Trees Inorder,Preorder,Postorder(using non-recursive).**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

#include<iostream.h>

#include<conio.h>

class NODE

{

public:

int data;

NODE \*left;

NODE \*right;

};

class BST\_130

{ NODE \*root;

public:

BST\_130();

void INSERT\_130(int);

void PREORDER\_130();

void INORDER\_130();

void POSTORDER\_130();

void MENU\_130();

};

BST\_130::BST\_130()

{

root=NULL;

}

void BST\_130:: INSERT\_130(int ele)

{

NODE \*chld,\*par;

NODE \*NN=new NODE();

NN->data=ele;

NN->left=NULL;

NN->right=NULL;

if(root==NULL)

{

root=NN;

}

else

{

chld=root;par=NULL;

while(chld!=NULL)

{

if(ele<chld->data)

{

par=chld;

chld=chld->left;

}

else

{

par=chld;

chld=chld->right;

}

}

if(ele<par->data)

{

par->left=NN;

}

else

{

par->right=NN;

}

}

}

void BST\_130::PREORDER\_130()

{

NODE \*ptr;

NODE\* STK[20]; int top=0;

ptr=root;

L1:while(ptr!=NULL)

{

cout<<" "<<ptr->data;

if(ptr->right!=NULL)

{

STK[++top]=ptr->right;

}

ptr=ptr->left;

}

while(top>0)

{

ptr=STK[top--];

goto L1;

}

}

void BST\_130::INORDER\_130()

{

NODE \*ptr;

NODE\* STK[20]; int top=0;

ptr=root;

L1:while(ptr!=NULL)

{

STK[++top]=ptr;

ptr=ptr->left;

}

while(top>0)

{

ptr=STK[top--];

cout<<" "<<ptr->data;

if(ptr->right!=NULL)

{

ptr=ptr->right;

goto L1;

}

}

}

void BST\_130::POSTORDER\_130()

{

NODE \*ptr;

NODE\* STK1[20];int STK2[20],top=0;

ptr=root;

L1:while(ptr!=NULL)

{

STK1[++top]=ptr;

STK2[top]=1;

if(ptr->right!=NULL)

{

STK1[++top]=ptr->right;

STK2[top]=-1;

}

ptr=ptr->left;

}

while(top>0)

{

ptr=STK1[top];

if(STK2[top--]>0)

cout<<" "<<ptr->data;

else

goto L1;

}

}

void BST\_130::MENU\_130()

{

int choice,ele,x;

do

{

cout<<endl<<"\n Select your choice"<<endl;

cout<<"1.INSERT"<<endl;

cout<<"\n 2.PREORDER"<<endl;

cout<<"\n 3.INORDER"<<endl;

cout<<"\n 4.POSTORDER"<<endl;

cout<<"\n 5.EXIT"<<endl;

cout<<"\n Enter your choice: "<<endl;

cin>>choice;

switch(choice)

{

case 1:

cout<<"Enter the element to ADD: ";

cin>>ele;

INSERT\_130(ele);

break;

case 2:

cout<<"Elements in Preorder: "<<endl;

PREORDER\_130();

break;

case 3:

cout<<"Elements in Inorder: "<<endl;

INORDER\_130();

break;

case 4:

cout<<"Elements in Postorder: "<<endl;

POSTORDER\_130();

break;

case 5:

return;

default:

cout<<"Invalid choice";

}

}while(1);

}

void main()

{

clrscr();

BST\_130 obj;

obj.MENU\_130();

getch();

}