EXPERIMENT 10

INPUT:-

#include<iostream>

#include<conio.h>

#include<string.h>

#include<stdlib.h>

using namespace std;

class node

{

public:

int data;

int bal;

node \*left;

node \*right;

};

class Tree

{

public:

node \*insert(node \*,node \*);

node \*rotateRight(node \*);

node \*rotateLeft(node \*);

void disp(node \*,int);

};

void Tree::disp(node\* root,int k)

{

int i;

if(root)

{

disp(root->right, k+1);

cout<<endl;

for(i = 0; i< k; i++)

cout<<' ';

cout<<root->data;

disp(root->left, k+1);

}

}

node \*Tree::insert(node \*root,node \*s)

{

if(s->data > root->data)

{

if(root->right == NULL)

root->right = s;

else

root->right = insert(root->right, s);

}

if(s->data <= root->data)

{

if(root->left == NULL)

root->left = s;

else

root->left = insert(root->left,s);

}

if(root->left==NULL && root->right!=NULL)

root->bal = -1;

else if(root->left!=NULL && root->right==NULL)

root->bal = 1;

else

root->bal = 0;

if(root->bal == 1 && root->left->bal == 1)

root = rotateRight(root);

if(root->bal == -1 && root->right->bal == -1)

root = rotateLeft(root);

if(root->bal == 1 && root->left->bal == -1)

{

root->left = rotateRight(root->left);

root = rotateRight(root);

}

if(root->bal == -1 && root->right->bal == 1)

{

root->right = rotateLeft(root->right);

root = rotateRight(root);

}

return root;

}

node \*Tree :: rotateRight(node \*root)

{

node \*temp;

temp = root->left;

root->left = temp->right;

temp->right = root;

return temp;

}

node \*Tree :: rotateLeft(node \*root)

{

node \*temp;

temp = root->right;

root->right = temp->left;

temp->left = root;

return temp;

}

int main()

{

int ch,c;

char temp;

node \*root,\*s;

Tree t;

root = new node;

root = NULL;

do{

s=new node;

s->bal = 0;

s->left=NULL;

s->right=NULL;

cout<<"\n"<<"Enter node of tree::";

cin>>s->data;

if(root == NULL)

root = s;

else

root = t.insert(root, s);

cout<<"\n\n Tree is :\n\n";

t.disp(root, 1);

cout<<"\n";

cout<<"\n"<<"WANT TO ENTER MORE ELEMENTS(y/n)::";

cin>>temp;

}while(temp=='y');

cout<<endl;

}

OUTPUT:-

Enter node of tree::6

Tree is :

6

WANT TO ENTER MORE ELEMENTS(y/n)::y

Enter node of tree::5

Tree is :

6

5

WANT TO ENTER MORE ELEMENTS(y/n)::y

Enter node of tree::4

Tree is :

6

5

4

WANT TO ENTER MORE ELEMENTS(y/n)::y

Enter node of tree::7

Tree is :

7

6

5

4

WANT TO ENTER MORE ELEMENTS(y/n)::y

Enter node of tree::9

Tree is :

9

7

6

5

4

WANT TO ENTER MORE ELEMENTS(y/n)::n

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Process exited after 34.86 seconds with return value 0

Press any key to continue . . .