**Task 1:**

**BTS with link list:**

Code:

#include<iostream>

using namespace std;

struct t\_list

{

int d;

t\_list \*left;

t\_list \*right;

};

struct t\_list \*root=NULL;

void Insert\_In\_List(int n)

{

t\_list \*i=new t\_list();

i->d=n;

i->left=NULL;

i->right=NULL;

if(root==NULL)

{

root=i;

}

else

{

t\_list \*r=root;

while(true)

{

if(r->d>n)

{

if(r->left==NULL)

{

r->left=i;

break;

}

else

{

r=r->left;

}

}

else

{

if(r->right==NULL)

{

r->right=i;

break;

}

else

{

r=r->right;

}

}

}

}

}

void InOrder(t\_list \*r)

{

if(r==NULL)

{

return;

}

else

{

InOrder(r->left);

cout<<r->d<<endl;

InOrder(r->right);

}

}

void PreOrder(t\_list \*r)

{

if(r==NULL)

{

return;

}

else

{

cout<<r->d<<endl;

PreOrder(r->left);

PreOrder(r->right);

}

}

void PostOrder(t\_list \*r)

{

if(r==NULL)

{

return;

}

else

{

PostOrder(r->left);

PostOrder(r->right);

cout<<r->d<<endl;

}

}

int main()

{

int choice,n;

do

{

cout<<"\nPress 1 to Insert : ";

cout<<"\nPress 2 to InOrder Display : ";

cout<<"\nPress 3 to PreOrder Display : ";

cout<<"\nPress 4 to PostOrder Display : ";

cout<<"\nPress 0 to exit : ";

cout<<"\nEnter a Choice : ";

cin>>choice;

switch(choice)

{

case 1:

cout<<"\nEnter a Number : ";

cin>>n;

Insert\_In\_List(n);

break;

case 2:

cout<<"\nIn\_order display Tree LPR :\n";

InOrder(root);

break;

case 3:

cout<<"\nPre\_order display Tree PLR :\n";

PreOrder(root);

break;

case 4:

cout<<"\nPost\_order display Tree LRP :\n";

PostOrder(root);

break;

case 0:

exit(0);

default:

cout<<"\nInvalid Input...!!!!\n";

}

}while(choice!=0);

return 0;

}

**Task 2:**

**BTS with Array :**

Code:

#include<iostream>

using namespace std;

struct t\_array

{

int num;

};

t\_array A[50];

void Insert\_in\_array(int n)

{

int i=0;

while(true)

{

if(A[i].num==-1)

{

A[i].num=n;

cout<<"\nValue inserted succussfully...\n";

break;

}

else

{

if(A[i].num>n)

{

i=i\*2+1;

}

else

{

i=i\*2+2;

}

}

}

}

void InOrder\_arr(int r)

{

if(A[r].num==-1)

{

return;

}

else

{

InOrder\_arr(2\*r+1);

cout<<A[r].num<<endl;

InOrder\_arr(2\*r+2);

}

}

void PreOrder\_arr(int r)

{

if(A[r].num==-1)

{

return;

}

else

{

cout<<A[r].num<<endl;

PreOrder\_arr(2\*r+1);

PreOrder\_arr(2\*r+2);

}

}

void PostOrder\_arr(int r)

{

if(A[r].num==-1)

{

return ;

}

else

{

PostOrder\_arr(2\*r+1);

PostOrder\_arr(2\*r+2);

cout<<A[r].num<<endl;

}

}

int main()

{

for(int i=0;i<50;i++)

{

A[i].num=-1;

}

int choice,v;

do

{

cout<<"\nPress 1 to insert : ";

cout<<"\nPress 2 to Display InOrder : ";

cout<<"\nPress 3 to Display PreOrder : ";

cout<<"\nPress 4 to Display PostOrder : ";

cout<<"\nPress 5 to Exit : ";

cout<<"\nEnter a choice : ";

cin>>choice;

switch(choice)

{

case 1:

cout<<"\nEnter a Number : ";

cin>>v;

Insert\_in\_array(v);

break;

case 2:

cout<<"\nIn\_order display Tree LPR :\n";

InOrder\_arr(0);

break;

case 3:

cout<<"\nPre Order Tree display PLR :\n";

PreOrder\_arr(0);

break;

case 4:

cout<<"\nPost Order Tree display LRP :\n";

PostOrder\_arr(0);

break;

case 5:

exit(0);

default:

cout<<"\nInvalid Input!!!\n";

}

}while(true);

return 0;

}