

## HPC Pac-1A

```
#include<iostream>
#include<stdlib.h>
#include<queue>
using namespace std;
class node
{   public:
    node *left, *right;
    int data;
};
class Breadthfs
{
    public:node *insert(node *, int);
    void bfs(node *);
};
node *insert(node *root, int data)
// inserts a node in tree
{
    if(!root)
    {
        root=new node;
        root->left=NULL;
        root->right=NULL;
        root->data=data;
        return root;
    }
    queue<node *> q;
    q.push(root);
    while(!q.empty())
    {
        node *temp=q.front();
        q.pop();
        if(temp->left==NULL)
```

```

    {
        temp->left=new node;
        temp->left->left=NULL;
        temp->left->right=NULL;
        temp->left->data=data;
        return root;
    }
    else
    {
        q.push(temp->left);
    }
    if(temp->right==NULL)
    {
        temp->right=new node;
        temp->right->left=NULL;
        temp->right->right=NULL;
        temp->right->data=data;
        return root;
    }
    else
    {
        q.push(temp->right);
    }
}
return root;
}

void bfs(node *head)
{
    queue<node*> q;
    q.push(head);
    int qSize;
    while (!q.empty())

```

```

    {
        qSize = q.size();
        #pragma omp parallel for
        //creates parallel threads
        for (int i = 0; i < qSize; i++)
        {
            node* currNode;
            #pragma omp critical
            {
                currNode = q.front();
                q.pop();
                cout<<"\t"<<currNode->data;
            }// prints parent node
            #pragma omp critical
            {
                if(currNode->left)// push parent's left node in queue
                    q.push(currNode->left);
                if(currNode->right)
                    q.push(currNode->right);
            }// push parent's right node in queue
        }
    }
}

int main(){
    node *root=NULL;

    int data;
    char ans;

    do
    {
        cout<<"\n enter data=>";
    }

```

## HPC Pac-1A

```
    cin>>data;

    root=insert(root,data);

    cout<<"do you want insert one more node?";

    cin>>ans;

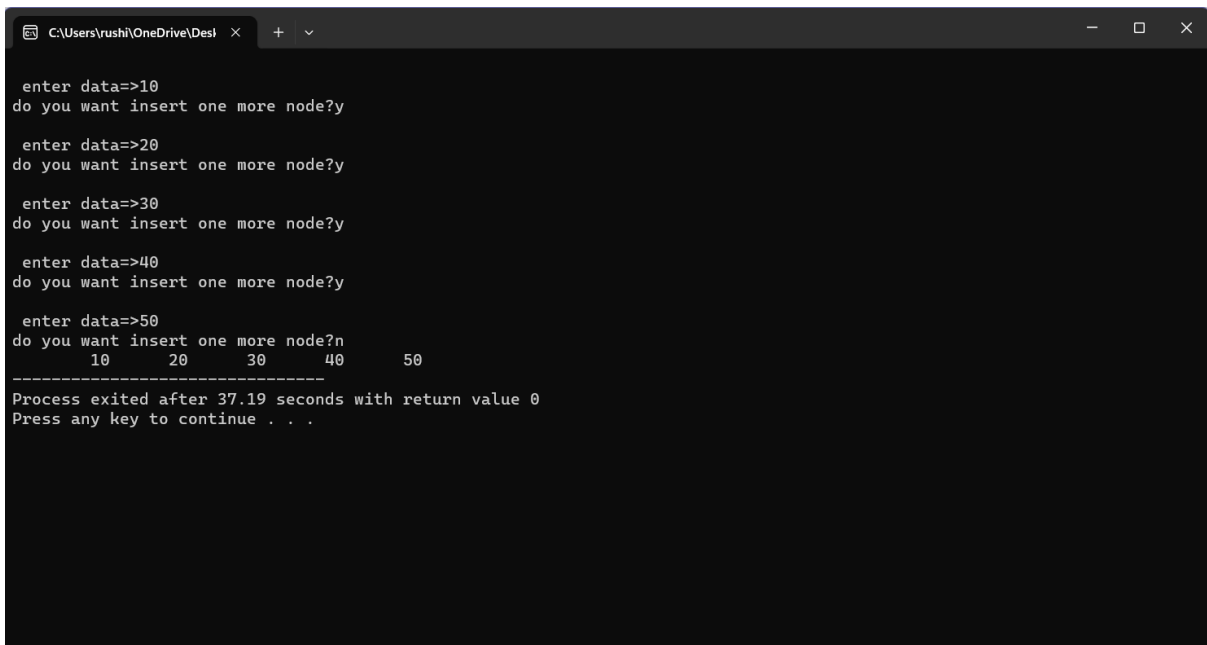
} while(ans=='y' || ans=='Y');

    bfs(root);

    return 0;

}
```

## Output



```
C:\Users\rushi\OneDrive\Desktop x + v

enter data=>10
do you want insert one more node?y

enter data=>20
do you want insert one more node?y

enter data=>30
do you want insert one more node?y

enter data=>40
do you want insert one more node?y

enter data=>50
do you want insert one more node?n
    10    20    30    40    50
-----
Process exited after 37.19 seconds with return value 0
Press any key to continue . . .
```