Practical No: 2 Write a program to implement union and find operation.

```
#include<iostream>
#include<conio.h>
using namespace std;
typedef struct Node
{
int nParent;
int nInfo;
}* PNode,Node; Node* Tree;
int n;
void ReadData()
{
cout<<"Enter the number of nodes: ";
cin>>n;
Tree= new Node[n+1];
for(int i=1;i<=n;i++)
Tree[i].nInfo = -1;
cout<<"Enter type data in the nodes: ";
for(int i=1;i<=n;i++)
{
cin>>Tree[i].nInfo;
Tree[i].nParent = -1;
}
}
void Union(int i,int j)
{
int temp = Tree[i].nParent = Tree[j].nParent;
if(Tree[i].nParent> Tree[j].nParent)
{
Tree[i].nParent = j;
Tree[j].nParent = temp;
}
else
{
Tree[j].nParent = i;
Tree[i].nParent = temp;
}
}
int Find(int i)
{
while(Tree[i].nParent>=0)
{
i=Tree[i].nParent;
}
return i;
}
void main()
{
//clrscr();
```

```
ReadData();
int x;
int ch,root1,root2;
do
{
cout<<"\n ****Main Menu****";
cout<<"\n 1.UNION 2.Find 3.Exit";
cout<<"\n Enter Your Choice: ";
cin>>ch;
if(ch==1)
{
        cout<<"Enter roots of both tree: ";
        cin>>root1>>root2;
        Union(root1,root2);
}
if(ch==2)
{
cout<<"Enter roots of both tree: ";
cin>>root1>>root2;
Union(root1,root2);
cout<<"Enter the node to find: ";
cin>>x;
cout<<"ROOT NODE OF " <<x<<" is: ";
cout<<Find(x);
cout<<"\n";
}
}
while(ch!=3);
getch();
}
```

/*OUTPUT*/

```
Enter the number of nodes: 8
Enter type data in the nodes: 1 2 3 4 5 6 7 8

******Main Menu******
1.UNION 2.Find 3.Exit
Enter Your Choice: 1
Enter roots of both tree: 1 2

******Main Menu******
1.UNION 2.Find 3.Exit
Enter Your Choice: 1
Enter roots of both tree: 3 4

******Main Menu******
1.UNION 2.Find 3.Exit
Enter Your Choice: 1
Enter roots of both tree: 5 6
```

******Main Menu******
1.UNION 2.Find 3.Exit
Enter Your Choice: 1
Enter roots of both tree: 7 8

******Main Menu******
1.UNION 2.Find 3.Exit
Enter Your Choice: 1
Enter roots of both tree: 1 3

******Main Menu******
1.UNION 2.Find 3.Exit
Enter Your Choice: 1
Enter roots of both tree: 5 7

******Main Menu******
1.UNION 2.Find 3.Exit
Enter Your Choice: 1
Enter roots of both tree: 1 5

******Main Menu******
1.UNION 2.Find 3.Exit
Enter Your Choice: 2
Enter the node to find: 5
ROOT NODE OF 5 is: 1

******Main Menu******
1.UNION 2.Find 3.Exit
Enter Your Choice: 2
Enter the node to find: 4
ROOT NODE OF 4 is: 1

******Main Menu******
1.UNION 2.Find 3.Exit
Enter Your Choice: 3