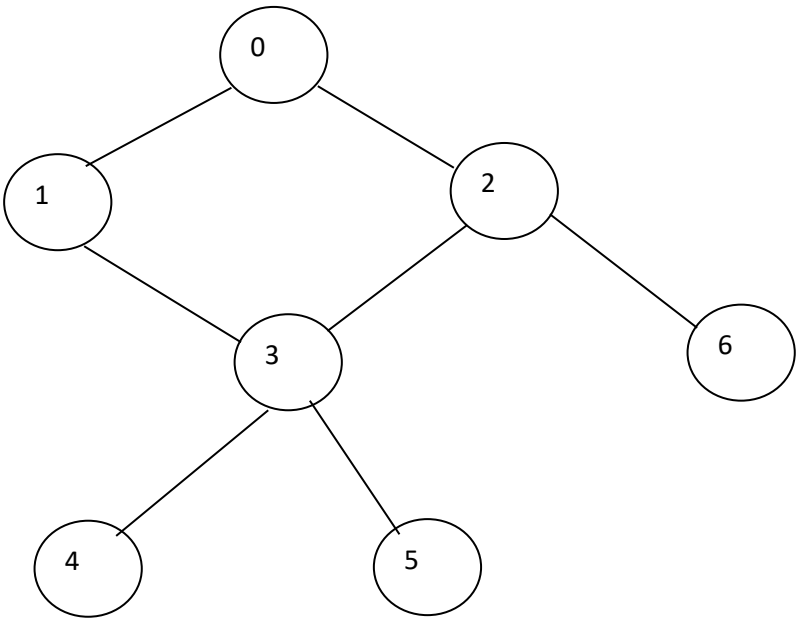
Assignment 1

Parallel DFS

```
#include<bits/stdc++.h>
#include<omp.h>
using namespace std;

class Graph {
public:
        map<int, bool> visited;
        map<int, list<int> > adj;

        // function to add an edge to graph
        void addEdge(int v, int w);

        // DFS traversal of the vertices reachable from v
        void DFS(int v);
};

void Graph::addEdge(int v, int w)
{
        adj[v].push_back(w); // Add w to v's list.
}

void Graph::DFS(int v)
{
         #pragma omp parallel
        // Mark the current node as visited and print it
        visited[v] = true;
        cout<<v<<" ";
        list<int>::iterator i; // Recur for all the vertices adjacent to this vertex
```

```
        for(i=adj[v].begin();i!=adj[v].end();++i)
        {
           if(!visited[*i])
                        DFS(*i);
        }
}

int main()
{
         omp_set_num_threads(4);
         int z;
        Graph g;
        g.addEdge(0,1);
        g.addEdge(0,2);
        g.addEdge(1,3);
        g.addEdge(2,3);
        g.addEdge(3,4);
        g.addEdge(3,5);
       g.addEdge(2,6);
        cout<<"Enter the vertex to start the DFS traversal with: "<<endl;
        cin>>z;
        cout<<"\nDepth First Traversal: \n";
        g.DFS(z);
        cout<<endl;
        return 0;
}
```



Output –

Enter the vertex to start the DFS traversal with:

0

Depth First Traversal:

0 1 3 4 5 2 6