Our Solution(s)   Run Code

Solution 1

```csharp
1  // Copyright © 2020 AlgoExpert, LLC. All rights reserved.
2
3  using System.Collections.Generic;
4
5  public class Program {
6    public class Node {
7      public string name;
8      public List<Node> children = new List<Node>();
9
10     public Node(string name) {
11       this.name = name;
12     }
13
14     // O(v + e) time | O(v) space
15     public List<string> DepthFirstSearch(List<string> array) {
16       array.Add(this.name);
17       for (int i = 0; i < children.Count; i++) {
18         children[i].DepthFirstSearch(array);
19       }
20       return array;
21     }
22
23     public Node AddChild(string name) {
24       Node child = new Node(name);
25       children.Add(child);
26       return this;
27     }
28   }
29 }
30
```

Your Solutions   Run Code

Solution 1   Solution 2   Solution 3

```csharp
1  using System.Collections.Generic;
2
3  public class Program {
4    // Do not edit the class below except
5    // for the DepthFirstSearch method.
6    // Feel free to add new properties
7    // and methods to the class.
8    public class Node {
9      public string name;
10     public List<Node> children = new List<Node>();
11
12     public Node(string name) {
13       this.name = name;
14     }
15
16     public List<string> DepthFirstSearch(List<string> array) {
17       // Write your code here.
18       return null;
19     }
20
21     public Node AddChild(string name) {
22       Node child = new Node(name);
23       children.Add(child);
24       return this;
25     }
26   }
27 }
28
```

Our Tests

Custom Output   Submit Code

```csharp
1  using System.Collections.Generic;
2
3  public class ProgramTest {
4    Program.Node test1;
5    Program.Node test2;
6    Program.Node test3;
7    Program.Node test4;
```

```
 8    Program.Node test5;
 9
10    public ProgramTest() {
11      test1 = new Program.Node("A");
12      test1.AddChild("B").AddChild("C");
13      test1.children[0].AddChild("D");
14
15      test2 = new Program.Node("A");
16      test2.AddChild("B").AddChild("C").AddChild("D").AddChild("E");
17      test2.children[1].AddChild("F");
18
19      test3 = new Program.Node("A");
20      test3.AddChild("B");
21      test3.children[0].AddChild("C");
22      test3.children[0].children[0].AddChild("D").AddChild("E");
```

Run or submit code when you're ready.