

Our Solution(s)

Run Code

Your Solutions

Run Code

Solution 1

```
1 // Copyright © 2020 AlgoExpert, LLC. All rights reserved.
2
3 package main
4
5 type BinaryTreeNode struct {
6     Value int
7
8     Left *BinaryTreeNode
9     Right *BinaryTreeNode
10    Parent *BinaryTreeNode
11 }
12
13 // O(n) time | O(1) space
14 func (tree *BinaryTreeNode) IterativeInOrderTraversal(callback func(int)) {
15     var previous, next *BinaryTreeNode
16     current := tree
17     for current != nil {
18         if previous == nil || previous == current.Parent {
19             if current.Left != nil {
20                 next = current.Left
21             } else {
22                 callback(current.Value)
23                 if current.Right != nil {
24                     next = current.Right
25                 } else {
26                     next = current.Parent
27                 }
28             }
29         } else if previous == current.Left {
30             callback(current.Value)
31             if current.Right != nil {
32                 next = current.Right
33             } else {
34                 next = current.Parent
35             }
36         } else if previous == current.Right {
37             callback(current.Value)
38             next = current.Parent
39         }
40         previous = current
41         current = next
42     }
43 }
```

Our Tests

```
1 // Copyright © 2020 AlgoExpert, LLC. All rights reserved.
2
3 package main
4
5 type BinaryTreeNode struct {
6     Value int
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12
13 // O(n) time | O(1) space
14 func (tree *BinaryTreeNode) IterativeInOrderTraversal(callback func(int)) {
15     var previous, next *BinaryTreeNode
16     current := tree
17     for current != nil {
18         if previous == nil || previous == current.Parent {
19             if current.Left != nil {
20                 next = current.Left
21             } else {
22                 callback(current.Value)
23                 if current.Right != nil {
24                     next = current.Right
25                 } else {
26                     next = current.Parent
27                 }
28             }
29         } else if previous == current.Left {
30             callback(current.Value)
31             if current.Right != nil {
32                 next = current.Right
33             } else {
34                 next = current.Parent
35             }
36         } else if previous == current.Right {
37             callback(current.Value)
38             next = current.Parent
39         }
40         previous = current
41         current = next
42     }
43 }
```

Solution 1   Solution 2   Solution 3

```
1 package main
2
3 type BinaryTreeNode struct {
4     Value int
5
6     Left *BinaryTreeNode
7     Right *BinaryTreeNode
8     Parent *BinaryTreeNode
9 }
10
11 func (tree *BinaryTreeNode) IterativeInOrderTraversal(callback func(int)) {
12     // Write your code here.
13 }
14
```

Custom Output

Submit Code

```
1 // Copyright © 2020 AlgoExpert, LLC. All rights reserved.
2
3 package main
4
5 type BinaryTreeNode struct {
6     Value int
7
8     Left *BinaryTreeNode
9     Right *BinaryTreeNode
10    Parent *BinaryTreeNode
11 }
12
13 // O(n) time | O(1) space
14 func (tree *BinaryTreeNode) IterativeInOrderTraversal(callback func(int)) {
15     var previous, next *BinaryTreeNode
16     current := tree
17     for current != nil {
18         if previous == nil || previous == current.Parent {
19             if current.Left != nil {
20                 next = current.Left
21             } else {
22                 callback(current.Value)
23                 if current.Right != nil {
24                     next = current.Right
25                 } else {
26                     next = current.Parent
27                 }
28             }
29         } else if previous == current.Left {
30             callback(current.Value)
31             if current.Right != nil {
32                 next = current.Right
33             } else {
34                 next = current.Parent
35             }
36         } else if previous == current.Right {
37             callback(current.Value)
38             next = current.Parent
39         }
40         previous = current
41         current = next
42     }
43 }
```

Run or submit code when you're ready.