**SOFTWARE ENGENEERING**

**5 BCA B**

**"Practical - LAB 3"**

***BY***

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**SUBMITTED TO**

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## **QUESTION 1**

Task  
1. Traverse the tree using DFS  
2. Showcase the process of searching element in a graph.  
3. Take input from the user for searching an element.

### **Code Solution**

class Node:  
 def \_\_init\_\_(self, data):  
 self.data = data  
 self.left = None  
 self.right = None  
  
def dfs(node, target, path=None):  
 if path is None:  
 path = []  
   
 if node is None:  
 return False, path  
   
 path.append(node.data)  
   
 if node.data == target:  
 return True, path  
   
 found\_left, left\_path = dfs(node.left, target, path.copy())  
 if found\_left:  
 return True, left\_path  
   
 found\_right, right\_path = dfs(node.right, target, path.copy())  
 if found\_right:  
 return True, right\_path  
   
 return False, path  
  
root = Node(1)  
root.left = Node(2)  
root.right = Node(3)  
root.left.left = Node(4)  
root.left.right = Node(5)  
root.right.left = Node(6)  
root.right.right = Node(7)  
  
target = 5  
found, search\_path = dfs(root, target)  
  
if found:  
 print(f"Element {target} found. Path taken: {search\_path}")  
else:  
 print(f"Element {target} not found in the tree")

### **FINAL Output**

