

```

1 from queue import LinkedQueue
2
3 class BinaryTree:
4     class _Node:
5         __slots__ = '_element', '_left', '_right'
6
7         def __init__(self, element, left=None, right=None):
8             self._element = element
9             self._left = left
10            self._right = right
11
12    def __init__(self):
13        self._root = None
14        self._size = 0
15
16    def maketree(self, e, left, right):
17        self._root = self._Node(e, left._root, right._root)
18        left._root = None
19        right._root = None
20
21    def levelorder(self):
22        Q = LinkedQueue()
23        t = self._root
24        print(t._element, end='--')
25        Q.enqueue(t)
26
27        while not Q.is_empty():
28            t = Q.dequeue()
29            if t._left:
30                print(t._left._element, end='--')
31                Q.enqueue(t._left)
32            if t._right:
33                print(t._right._element, end='--')
34                Q.enqueue(t._right)
35
36    def inorder(self, troot):
37        if troot:
38            self.inorder(troot._left)
39            print(troot._element, end='--')
40            self.inorder(troot._right)
41
42    def preorder(self, troot):
43        if troot:
44            print(troot._element, end='--')
45            self.preorder(troot._left)
46            self.preorder(troot._right)
47

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48     def postorder(self, troot):
49         if troot:
50             self.postorder(troot._left)
51             self.postorder(troot._right)
52             print(troot._element, end='--')
53
54 a = BinaryTree()
55 x = BinaryTree()
56 y = BinaryTree()
57 z = BinaryTree()
58 r = BinaryTree()
59 s = BinaryTree()
60 t = BinaryTree()
61
62 x.maketree(40,a,a)
63 y.maketree(60,a,a)
64 z.maketree(20,x,a)
65 r.maketree(50,a,y)
66 s.maketree(30,r,a)
67 t.maketree(10,z,s)
68
69 t.levelorder()
70 print()
71 t.preorder(t._root)
72 print()
73 t.inorder(t._root)
74 print()
75 t.postorder(t._root)
76 print()
77
78
```