

## Problem 2: Ceil in a BST

```
class TreeNode:
```

```
def __init__(self, val=0, left=None, right=None):
```

```
    self.val = val
```

```
    self.left = left
```

```
    self.right = right
```

```
def insert(root, key):
```

```
    if root is None:
```

```
        return TreeNode(key)
```

```
    if key < root.val:
```

```
        root.left = insert(root.left, key)
```

```
    else:
```

```
        root.right = insert(root.right, key)
```

```
    return root
```

```
def ceil(root, target):
```

```
    if root is None:
```

```
        return None
```

```
    if root.val == target:
```

```
        return root.val
```

```
    if root.val < target:
```

```
        return ceil(root.right, target)
```

```
    ceil_val = ceil(root.left, target)
```

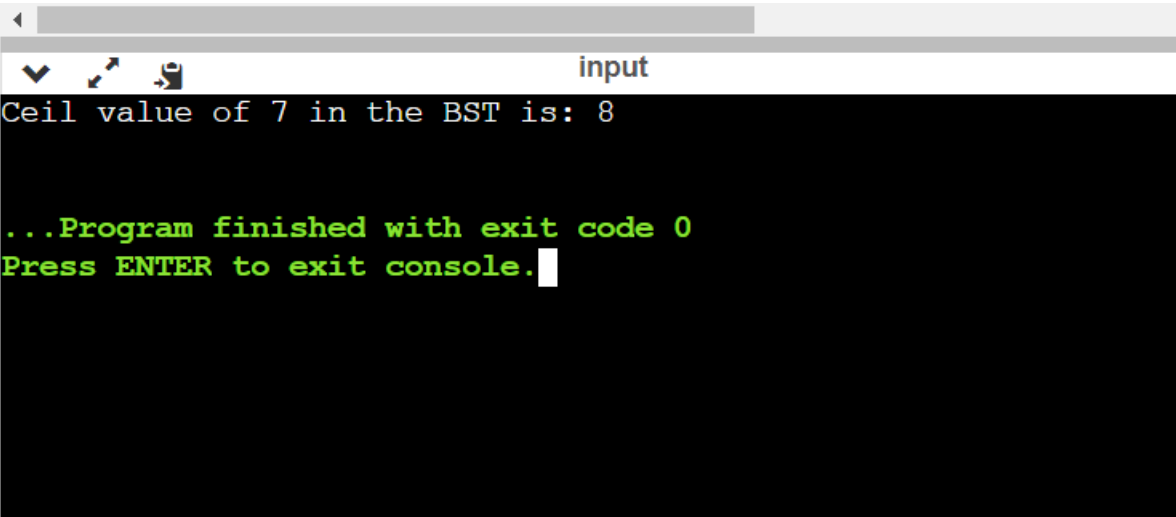
```
    if ceil_val is None or ceil_val < target:
```

```
        return root.val
```

```
    return ceil_val
```

```
root = None
root = insert(root, 8)
root = insert(root, 4)
root = insert(root, 12)
root = insert(root, 2)
root = insert(root, 6)
root = insert(root, 10)
root = insert(root, 14)
```

```
target = 7
ceil_value = ceil(root, target)
print("Ceil value of", target, "in the BST is:", ceil_value)
```

A screenshot of a terminal window with a dark background. The window's title bar is light gray and contains the word "input" in blue. Below the title bar, there are three small icons: a checkmark, a magnifying glass, and a document. The main area of the terminal is black and displays the following text in a monospaced font: "Ceil value of 7 in the BST is: 8" in white, followed by "...Program finished with exit code 0" and "Press ENTER to exit console." in green. A white cursor is positioned at the end of the last line of text.

```
input
Ceil value of 7 in the BST is: 8
...Program finished with exit code 0
Press ENTER to exit console.
```