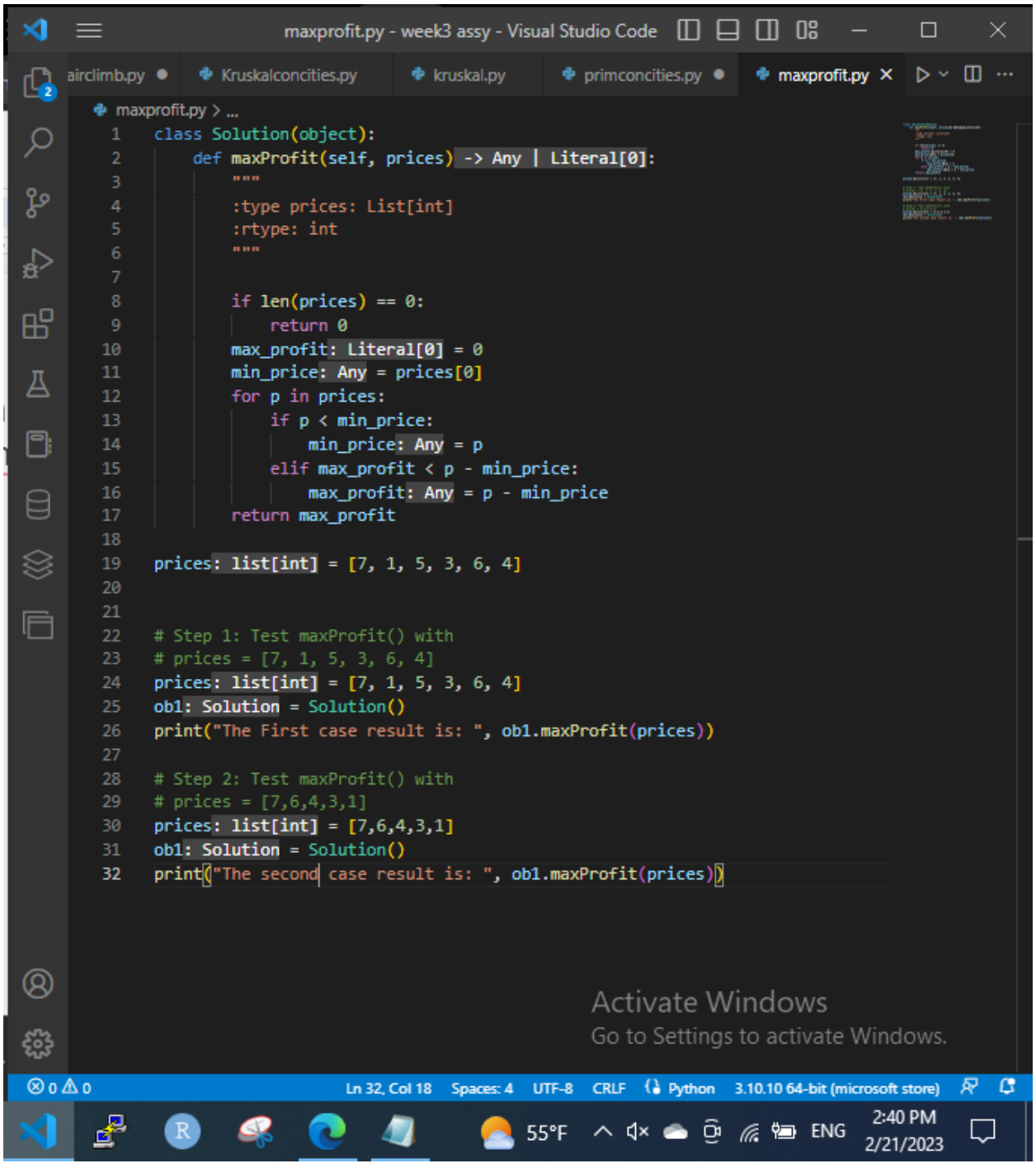
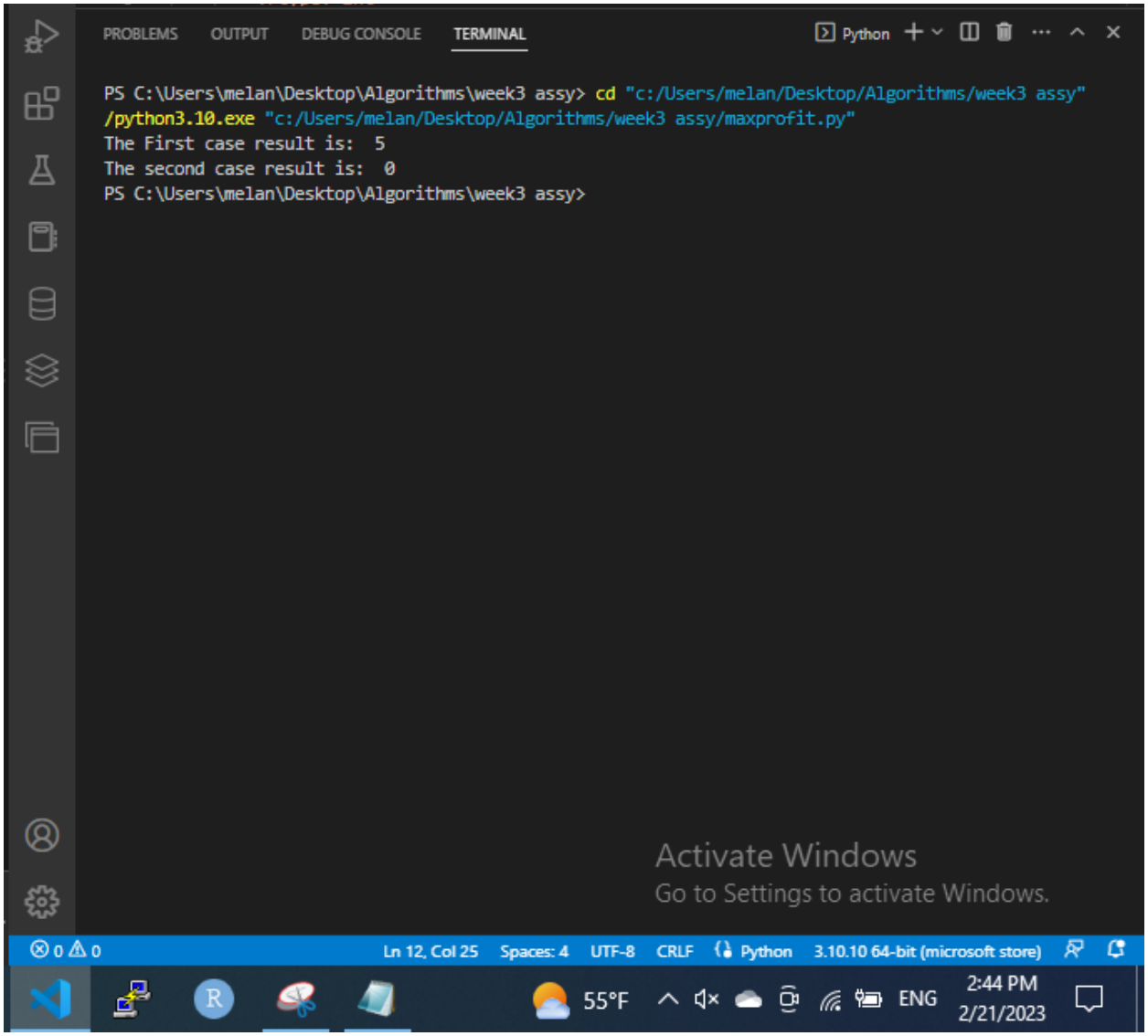
Week 5 Homework 3: Design Strategy: Greedy Algorithm / Dynamic Programming : Easy Problems - LC



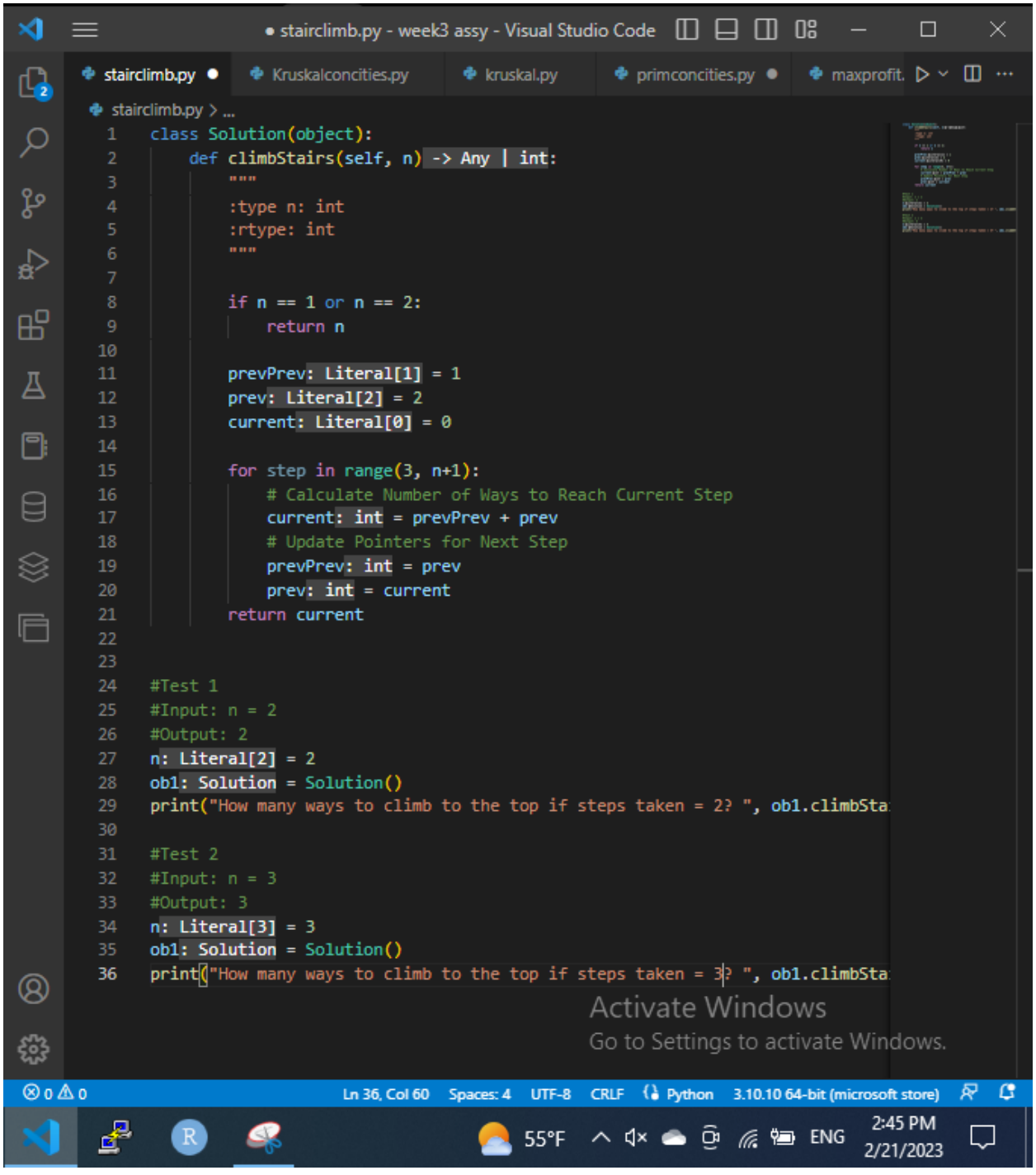

PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
Python
PS C:\Users\melan\Desktop\Algorithms\week3 assy> cd "c:/Users/melan/Desktop/Algorithms/week3 assy"
/python3.10.exe "c:/Users/melan/Desktop/Algorithms/week3 assy/maxprofit.py"
The First case result is: 5
The second case result is: 0
PS C:\Users\melan\Desktop\Algorithms\week3 assy>
Activate Windows
Go to Settings to activate Windows.
Ln 12, Col 25
Spaces: 4
UTF-8
CRLF
Python
3.10.10 64-bit (microsoft store)
55°F
ENG
2:44 PM
2/21/2023

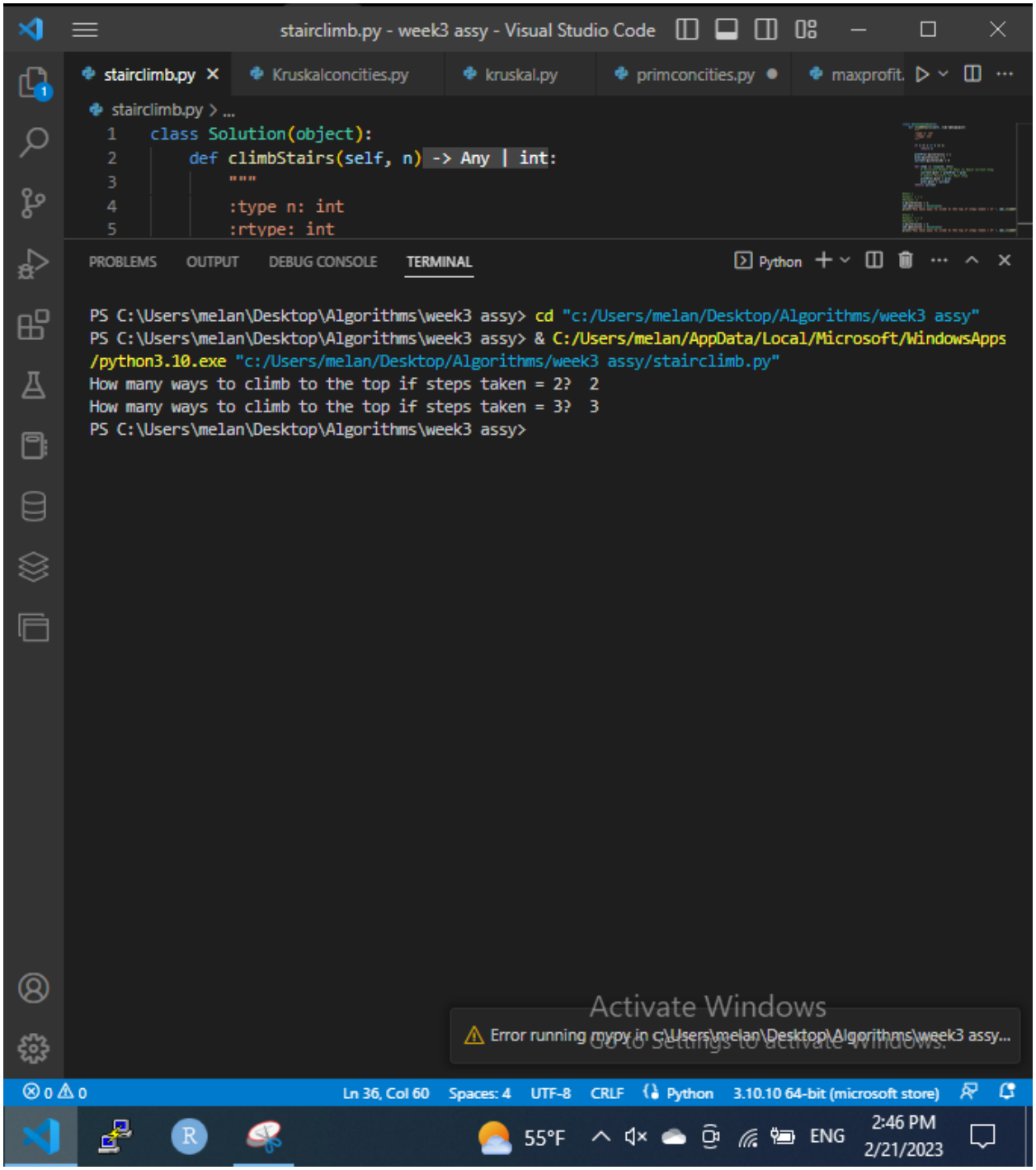
CODE

```
class Solution(object):
    def maxProfit(self, prices):
        """
        :type prices: List[int]
        :rtype: int
        """

        if len(prices) == 0:
            return 0
        max_profit = 0
        min_price = prices[0]
        for p in prices:
            if p < min_price:
                min_price = p
            elif max_profit < p - min_price:
                max_profit = p - min_price
        return max_profit


# Step 1: Test maxProfit() with
# prices = [7, 1, 5, 3, 6, 4]
```

```
prices = [7, 1, 5, 3, 6, 4]
ob1 = Solution()
print("The First case result is: ",
ob1.maxProfit(prices))

# Step 2: Test maxProfit() with
# prices = [7,6,4,3,1]
prices = [7,6,4,3,1]
ob1 = Solution()
print("The second case result is: ",
ob1.maxProfit(prices))
```

OPTIONAL


• stairclimb.py - week3 assy - Visual Studio Code
stairclimb.py
Kruskalconcities.py
kruskal.py
primconcities.py
maxprofit.
stairclimb.py > ...
class Solution(object):
def climbStairs(self, n) -> Any | int:
"""
:type n: int
:rtype: int
"""
if n == 1 or n == 2:
return n
prevPrev: Literal[1] = 1
prev: Literal[2] = 2
current: Literal[0] = 0
for step in range(3, n+1):
# Calculate Number of Ways to Reach Current Step
current: int = prevPrev + prev
Update Pointers for Next Step
prevPrev: int = prev
prev: int = current
return current
#Test 1
#Input: n = 2
#Output: 2
n: Literal[2] = 2
ob1: Solution = Solution()
print("How many ways to climb to the top if steps taken = 2? ", ob1.climbSta
#Test 2
#Input: n = 3
#Output: 3
n: Literal[3] = 3
ob1: Solution = Solution()
print("How many ways to climb to the top if steps taken = 3? ", ob1.climbSta
Activate Windows
Go to Settings to activate Windows.
Ln 36, Col 60
Spaces: 4
UTF-8
CRLF
Python
3.10.10 64-bit (microsoft store)
55°F
ENG
2:45 PM
2/21/2023


stairclimb.py - week3 assy - Visual Studio Code
stairclimb.py
Kruskalconcities.py
kruskal.py
primconcities.py
maxprofit.
stairclimb.py > ...
1 class Solution(object):
2 def climbStairs(self, n) -> Any | int:
3 """
4 :type n: int
5 :rtype: int
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
Python
PS C:\Users\melan\Desktop\Algorithms\week3 assy> cd "c:/Users/melan/Desktop/Algorithms/week3 assy"
PS C:\Users\melan\Desktop\Algorithms\week3 assy> & C:/Users/melan/AppData/Local/Microsoft/WindowsApps
/python3.10.exe "c:/Users/melan/Desktop/Algorithms/week3 assy/stairclimb.py"
How many ways to climb to the top if steps taken = 2? 2
How many ways to climb to the top if steps taken = 3? 3
PS C:\Users\melan\Desktop\Algorithms\week3 assy>
Activate Windows
Error running mypy in c:\Users\melan\Desktop\Algorithms\week3 assy...
Ln 36, Col 60
Spaces: 4
UTF-8
CRLF
Python
3.10.10 64-bit (microsoft store)
55°F
ENG
2:46 PM
2/21/2023

CODE

```
class Solution(object):
    def climbStairs(self, n):
        """
        :type n: int
        :rtype: int
        """

        if n == 1 or n == 2:
            return n

        prevPrev = 1
        prev = 2
        current = 0

        for step in range(3, n+1):
            # Calculate Number of Ways to Reach
Current Step
            current = prevPrev + prev
            # Update Pointers for Next Step
            prevPrev = prev
            prev = current
        return current
```

```
#Test 1
#Input: n = 2
#Output: 2
n = 2
ob1 = Solution()
print("How many ways to climb to the top if steps
taken = 2? ", ob1.climbStairs(n))

#Test 2
#Input: n = 3
#Output: 3
n = 3
ob1 = Solution()
print("How many ways to climb to the top if steps
taken = 3? ", ob1.climbStairs(n))
```