Week4q2

Python code

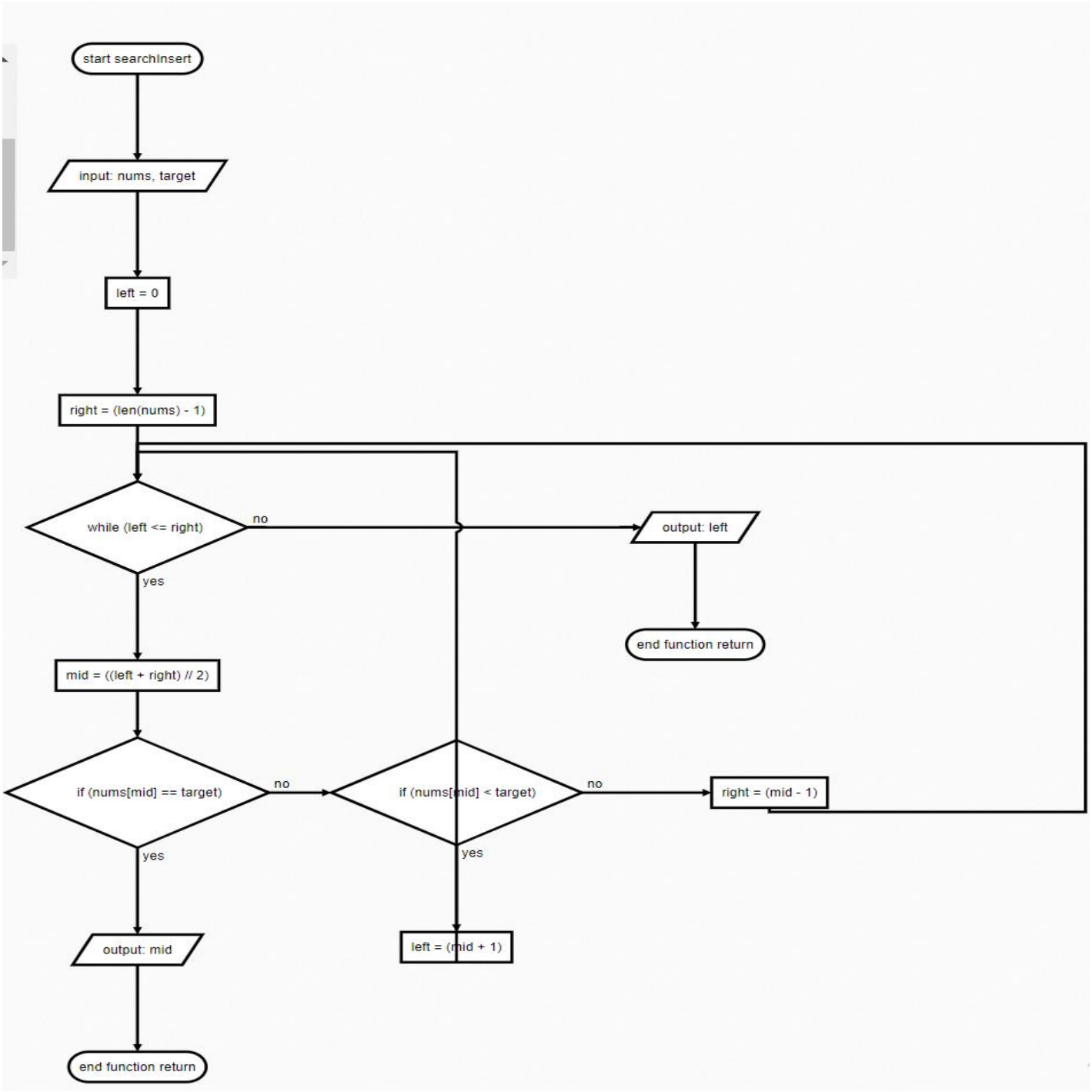
```python
def searchInsert(nums, target):
    # Initialize left and right pointers
    left = 0
    right = len(nums) - 1

    while left <= right:
        # Calculate the middle index
        mid = (left + right) // 2

        if nums[mid] == target:
            # If target is found, return the middle index
            return mid
        elif nums[mid] < target:
            # If target is greater, search the right half
            left = mid + 1
        else:
            # If target is smaller, search the left half
            right = mid - 1

    # If target is not found, return the index to insert target
    return left
```

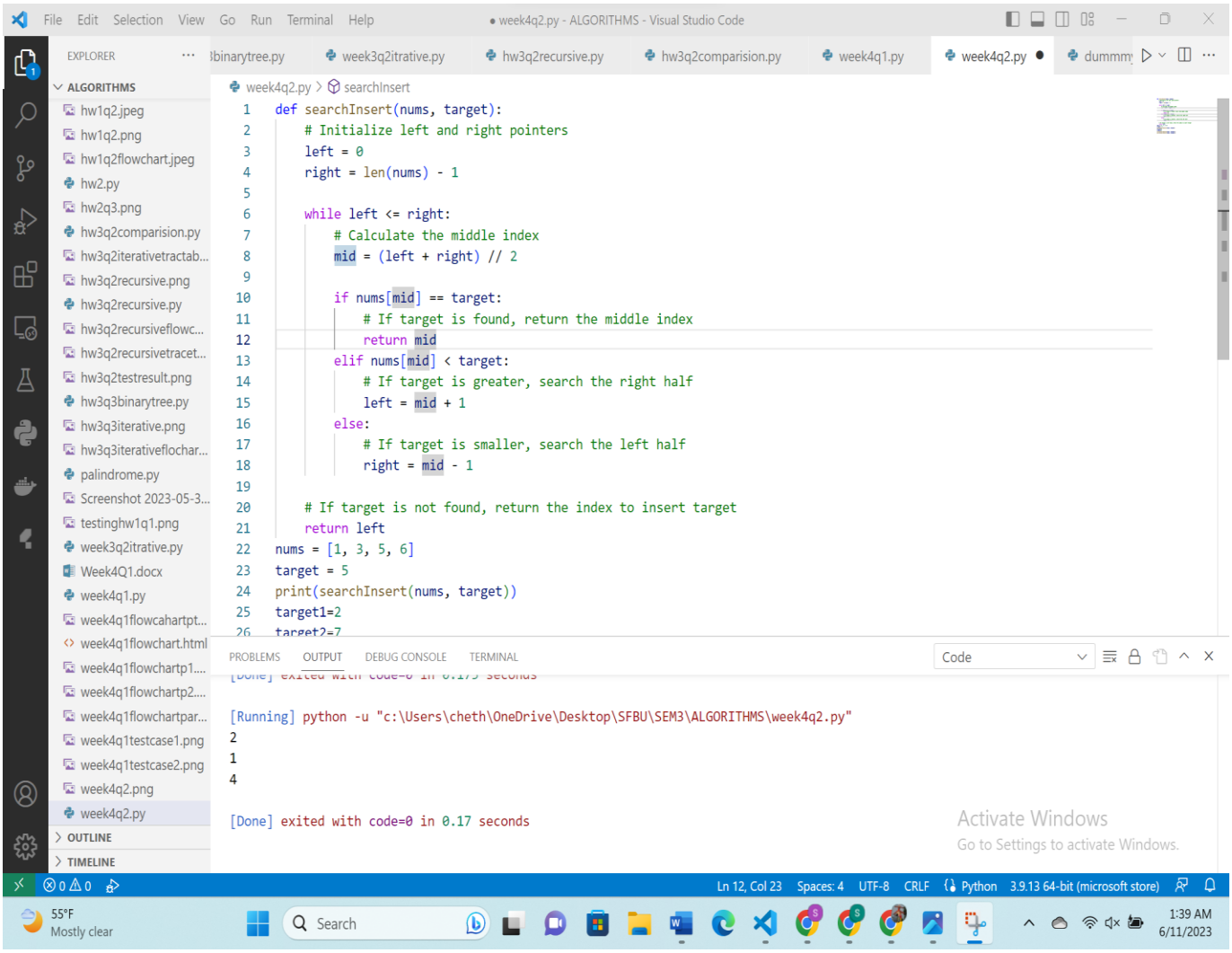
Flowchart

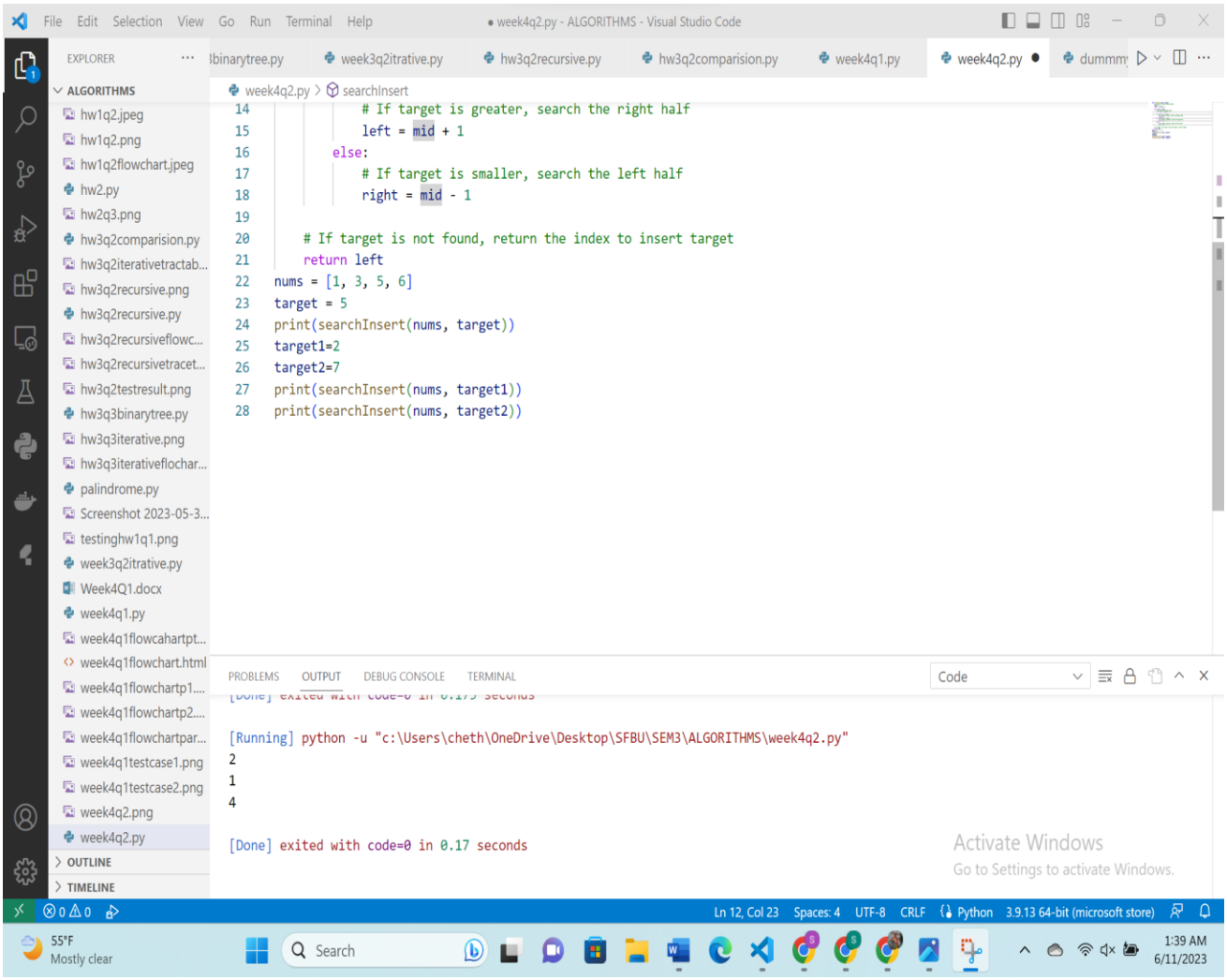

start searchInsert
input: nums, target
left = 0
right = (len(nums) - 1)
while (left <= right)
no
output: left
end function return
yes
mid = ((left + right) // 2)
if (nums[mid] == target)
no
if (nums[mid] < target)
no
right = (mid - 1)
yes
yes
output: mid
left = (mid + 1)
end function return

Tracetable:

steps	nums	target	left	right	Left<=right	mid	nums[mid]==target	Nums[mid]<target	return
1	[1,3,5,6]	5							
2			0						
3				3					
4					true				
5						(0+3)//2=1			
6									
7							false		
8								true	
9			1+1=2						
10					true				
5						(2+3)//2=2			
11							true		
12									2

Test cases


File Edit Selection View Go Run Terminal Help
week4q2.py - ALGORITHMS - Visual Studio Code
EXPLORER
ALGORITHMS
week4q2.py
searchInsert
def searchInsert(nums, target):
# Initialize left and right pointers
left = 0
right = len(nums) - 1
while left <= right:
# Calculate the middle index
mid = (left + right) // 2
if nums[mid] == target:
# If target is found, return the middle index
return mid
elif nums[mid] < target:
# If target is greater, search the right half
left = mid + 1
else:
# If target is smaller, search the left half
right = mid - 1
# If target is not found, return the index to insert target
return left
nums = [1, 3, 5, 6]
target = 5
print(searchInsert(nums, target))
target1=2
target2=7
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
[Running] python -u "c:\Users\cheth\OneDrive\Desktop\SFBU\SEM3\ALGORITHMS\week4q2.py"
2
1
4
[Done] exited with code=0 in 0.17 seconds
Activate Windows
Go to Settings to activate Windows.
Ln 12, Col 23 Spaces: 4 UTF-8 CRLF Python 3.9.13 64-bit (microsoft store)
55°F
Mostly clear
Search
1:39 AM
6/11/2023


File Edit Selection View Go Run Terminal Help
• week4q2.py - ALGORITHMS - Visual Studio Code
EXPLORER
ALGORITHMS
hw1q2.jpeg
hw1q2.png
hw1q2flowchart.jpeg
hw2.py
hw2q3.png
hw3q2comparision.py
hw3q2iterativetractab...
hw3q2recursive.png
hw3q2recursive.py
hw3q2recursiveflowc...
hw3q2recursivetracet...
hw3q2testresult.png
hw3q3binarytree.py
hw3q3iterative.png
hw3q3iterativeflochar...
palindrome.py
Screenshot 2023-05-3...
testinghw1q1.png
week3q2itrative.py
Week4Q1.docx
week4q1.py
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week4q1flowchart.html
week4q1flowchartp1....
week4q1flowchartp2....
week4q1flowchartpar...
week4q1testcase1.png
week4q1testcase2.png
week4q2.png
week4q2.py
OUTLINE
TIMELINE
binarytree.py
week3q2itrative.py
hw3q2recursive.py
hw3q2comparision.py
week4q1.py
week4q2.py
dummm
week4q2.py > searchInsert
# If target is greater, search the right half
left = mid + 1
else:
# If target is smaller, search the left half
right = mid - 1
# If target is not found, return the index to insert target
return left
nums = [1, 3, 5, 6]
target = 5
print(searchInsert(nums, target))
target1=2
target2=7
print(searchInsert(nums, target1))
print(searchInsert(nums, target2))
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Code
[Running] python -u "c:\Users\cheth\OneDrive\Desktop\SFBU\SEM3\ALGORITHMS\week4q2.py"
2
1
4
[Done] exited with code=0 in 0.17 seconds
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Ln 12, Col 23 Spaces: 4 UTF-8 CRLF Python 3.9.13 64-bit (microsoft store)
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