

Week9hw3

Step 2: Following the examples shown on Counting Sort to manually solve the problem with test data
'Input: nums = [1,4,3,2]; Output: 4'

Max=4

Input array=

1	4	3	2
---	---	---	---

Creating array of size max+1=

0	1	2	3	4

Histogram of input array=

	1	1	1	1
0	1	2	3	4

Count=

	1	2	3	4
0	1	2	3	4

Cycle1

Input array=

1	4	3	2
---	---	---	---

Count =

	1	2	3	4
0	1	2	3	4

1-1=0

Output=

1			
0	1	2	3

New count=

	0	2	3	4
0	1	2	3	4

Cycle2

Input array=

1	4	3	2
---	---	---	---

Count=

	0	2	3	4
0	1	2	3	4

$$4-1=3$$

Output=

1			4
0	1	2	3

New count=

	0	2	3	3
0	1	2	3	4

Cycle3

Input array=

1	4	3	2
---	---	---	---

count=

	0	2	3	3
0	1	2	3	4

$$3-1=2$$

Output=

1		3	4
0	1	2	3

New count=

	0	2	2	3
0	1	2	3	4

Cycle 4

Input array=	1	4	3	2
--------------	---	---	---	---

count=

	0	2	2	3
0	1	2	3	4

$$2-1=1$$

Output=

1	2	3	4
0	1	2	3

New count=

	0	1	2	3
0	1	2	3	4

Final output

1	2	3	4	element
0	1	2	3	index

Chatgpt Python code

```
def arrayPairSum(nums):
    # Create a counting array to store the count of each element
    count_array = [0] * 10001

    # Traverse the input array and update the count of each element in the
    # counting array
    for num in nums:
        count_array[num] += 1

    # Iterate over the counting array and calculate the sum
    sum_value = 0
    flag = True

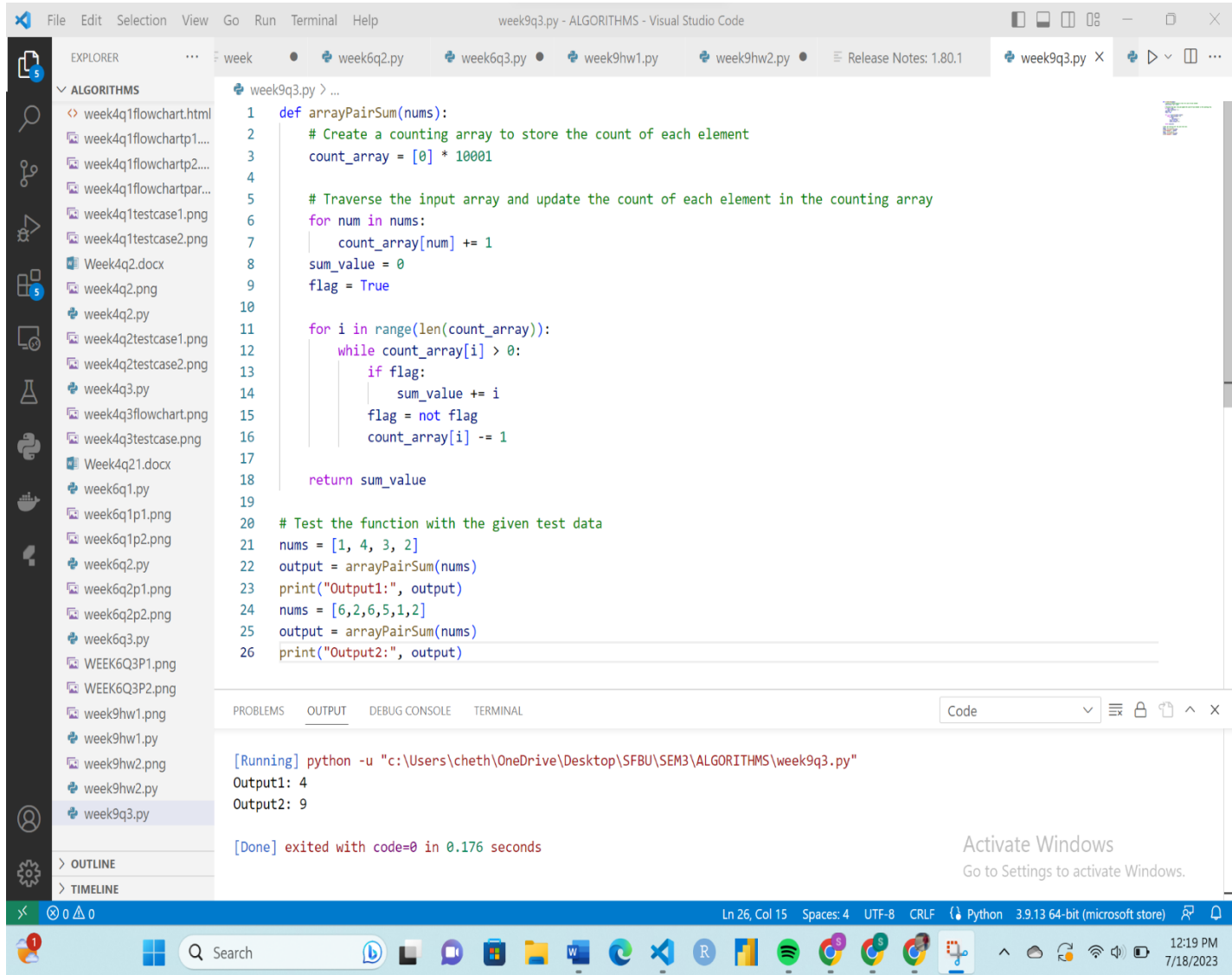
    for i in range(len(count_array)):
        while count_array[i] > 0:
            if flag:
                sum_value += i
            flag = not flag
            count_array[i] -= 1

    return sum_value

# Test the function with the given test data
nums = [1, 4, 3, 2]
```

```
output = arrayPairSum(nums)
print("Output:", output)
```

testcases



```
def arrayPairSum(nums):
    # Create a counting array to store the count of each element
    count_array = [0] * 10001

    # Traverse the input array and update the count of each element in the counting array
    for num in nums:
        count_array[num] += 1

    sum_value = 0
    flag = True

    for i in range(len(count_array)):
        while count_array[i] > 0:
            if flag:
                sum_value += i
            flag = not flag
            count_array[i] -= 1

    return sum_value

# Test the function with the given test data
nums = [1, 4, 3, 2]
output = arrayPairSum(nums)
print("Output1:", output)

nums = [6, 2, 6, 5, 1, 2]
output = arrayPairSum(nums)
print("Output2:", output)
```

[Running] python -u "c:\Users\cheth\OneDrive\Desktop\SFBU\SEM3\ALGORITHMS\week9q3.py"

Output1: 4

Output2: 9

[Done] exited with code=0 in 0.176 seconds

