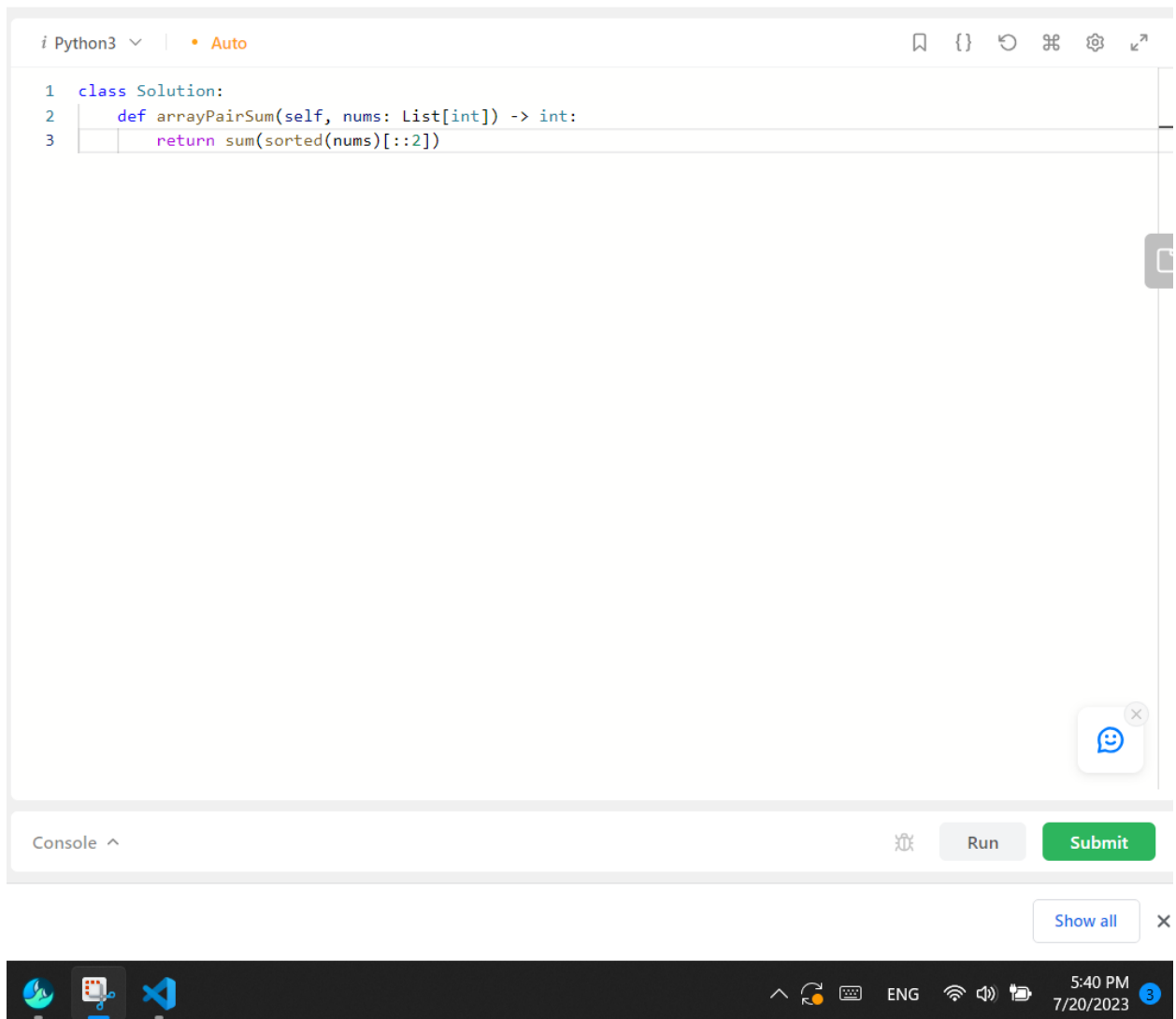


Step 1: Study 561 Array Partition I (local copy) - 75.09 Easy, Sort, Counting Sort

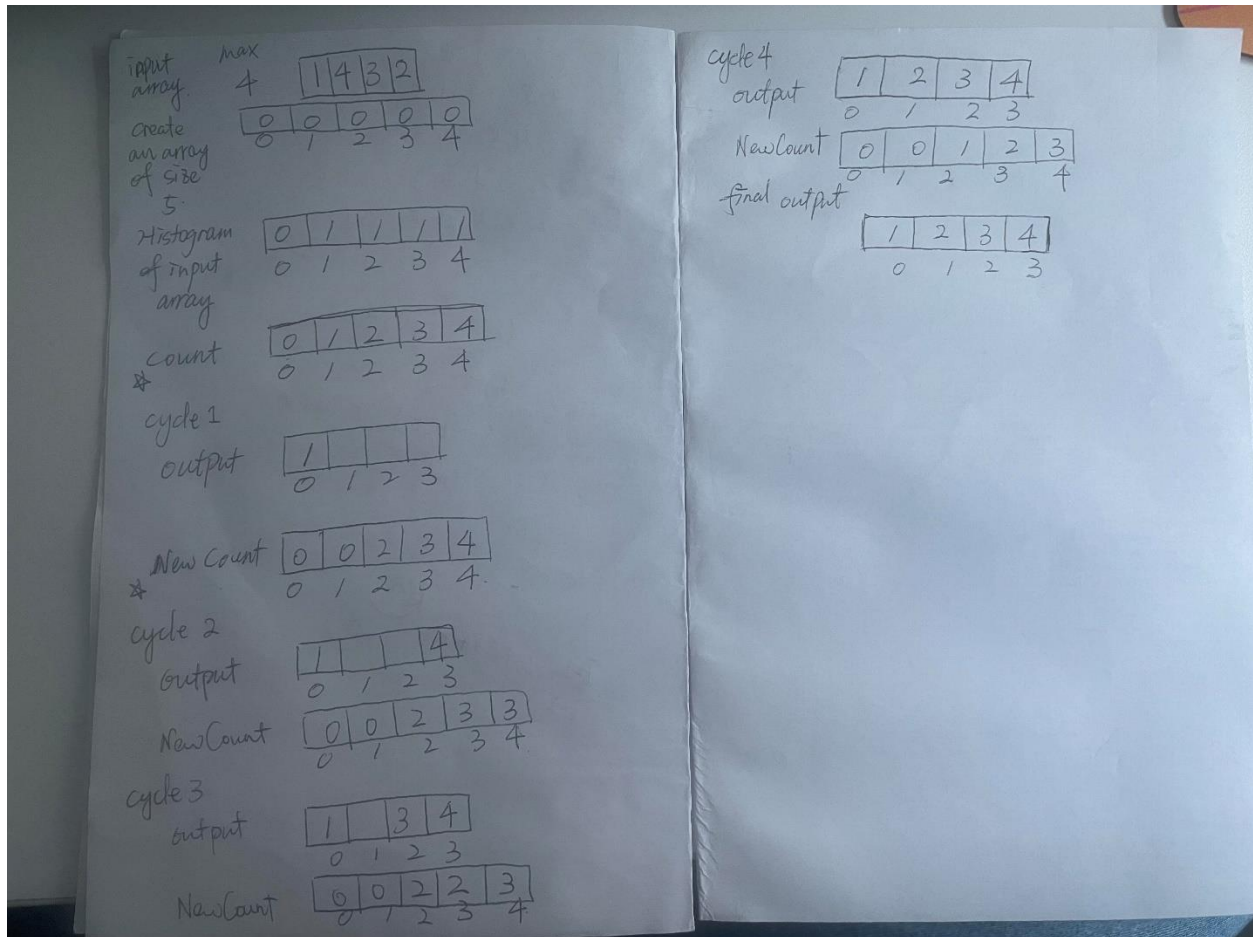


The screenshot shows a Python IDE interface. At the top, there's a toolbar with icons for file operations and a language dropdown set to 'Python3'. Below the toolbar, a code editor contains the following Python code:

```
1 class Solution:
2     def arrayPairSum(self, nums: List[int]) -> int:
3         return sum(sorted(nums)[::2])
```

Below the code editor is a 'Console' section with a 'Run' button and a 'Submit' button. A 'Show all' button is also visible. At the bottom of the screen, a taskbar shows system icons including network, volume, and battery, along with the date and time: 5:40 PM, 7/20/2023.

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'



Step 3: Ask ChatGPT: "How to use Counting Sort approach to implement a Python code to solve the LeetCode question: '561. Array Partition I', with the test data: 'Input: nums = [1,4,3,2]; Output: 4'"

Counting Sort is not directly applicable to solve the LeetCode question "561. Array Partition I" since Counting Sort is used to sort elements in a non-comparative manner. However, the problem "561. Array Partition I" is asking for the maximum sum of minimum values of pairs, and sorting the array using Counting Sort won't help directly in finding this value.

To solve the "561. Array Partition I" problem, you can use a different approach. Here's a Python code to solve the problem:

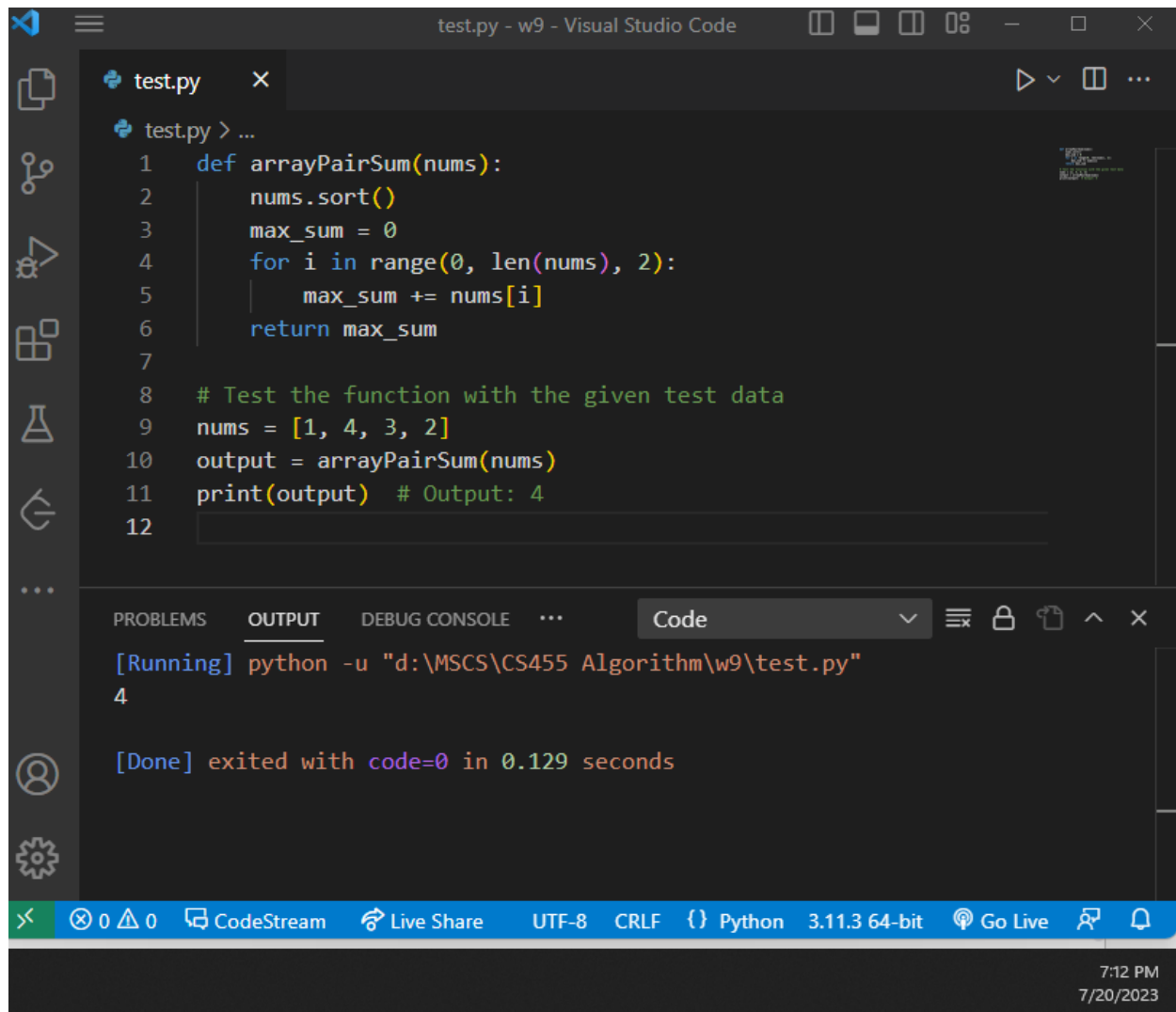
```
python Copy code  
  
def arrayPairSum(nums):  
    nums.sort()  
    max_sum = 0  
    for i in range(0, len(nums), 2):  
        max_sum += nums[i]  
    return max_sum  
  
# Test the function with the given test data  
nums = [1, 4, 3, 2]  
output = arrayPairSum(nums)  
print(output) # Output: 4
```

Explanation:

1. The `arrayPairSum` function takes the input array `nums` as the parameter.
2. The `nums` array is sorted in ascending order using the `sort()` method.
3. We initialize the `max_sum` variable to store the maximum sum of minimum values of pairs.
4. We iterate through the sorted array using a step of 2 (i.e., taking every alternate element).
For each pair of elements, we add the smaller element (minimum value) to the `max_sum`.
5. After processing all pairs, the `max_sum` will be the maximum sum of minimum values of pairs.
6. The function returns the `max_sum` as the result.

The output of the code for the given test data is `4`, which is the correct result for the problem "561. Array Partition I."

Step 4: Implement the Python code created by ChatGPT



The screenshot shows the Visual Studio Code interface with a file named `test.py` open. The code defines a function `arrayPairSum` that sorts a list of numbers and returns the sum of the first two elements. Below the function, a test case is provided with the list `[1, 4, 3, 2]`, and the output is printed as `4`. The bottom panel shows the output of running the script, confirming the result is `4` and the process exited successfully.

```
test.py > ...
1 def arrayPairSum(nums):
2     nums.sort()
3     max_sum = 0
4     for i in range(0, len(nums), 2):
5         max_sum += nums[i]
6     return max_sum
7
8 # Test the function with the given test data
9 nums = [1, 4, 3, 2]
10 output = arrayPairSum(nums)
11 print(output) # Output: 4
12
```

PROBLEMS OUTPUT DEBUG CONSOLE ... Code

[Running] python -u "d:\MSCS\CS455 Algorithm\w9\test.py"

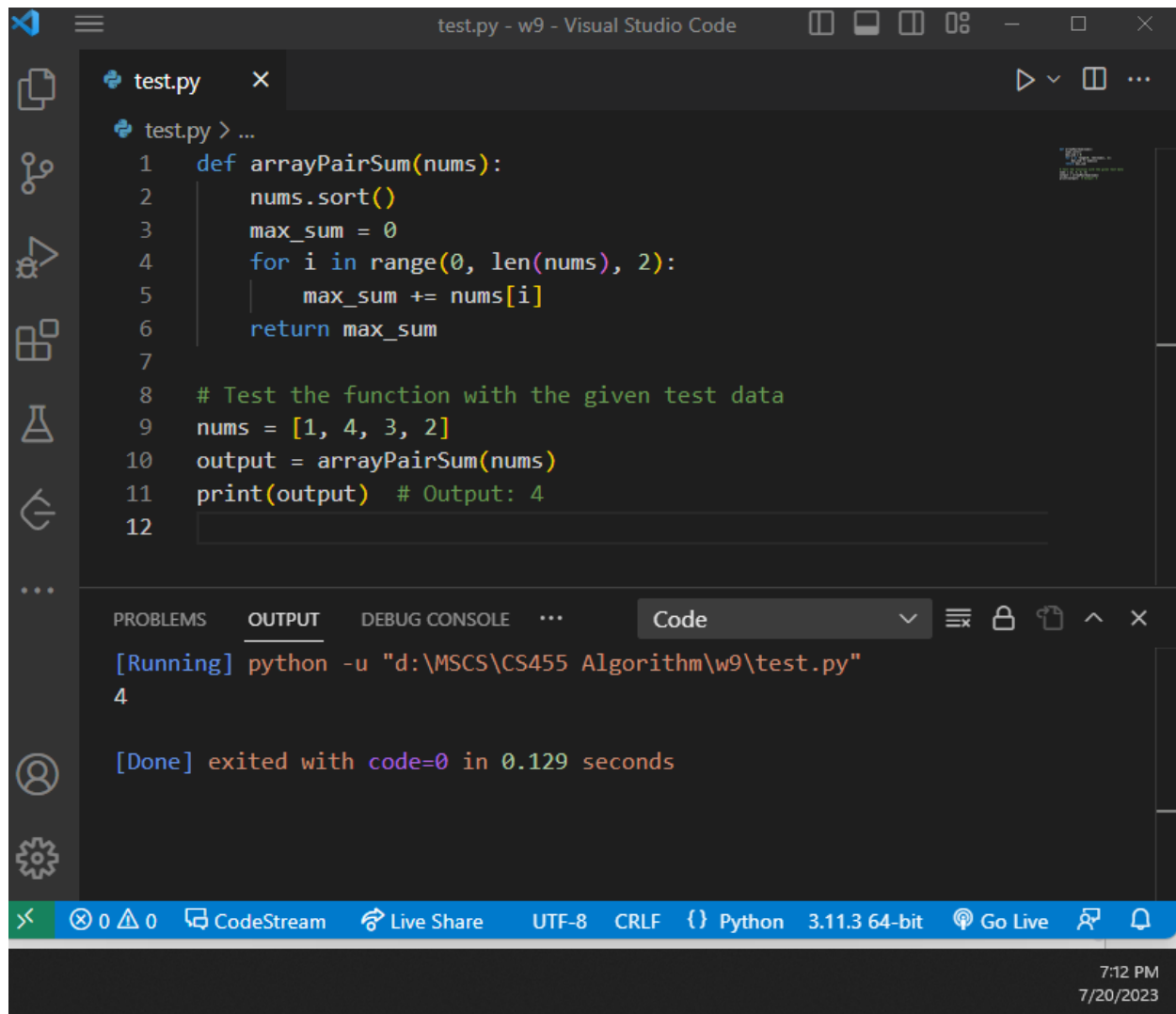
4

[Done] exited with code=0 in 0.129 seconds

0 0 CodeStream Live Share UTF-8 CRLF {} Python 3.11.3 64-bit Go Live

7:12 PM
7/20/2023

Step 5: Test the Python code with all the test cases provided by 561 Array Partition I (local copy)



The image shows a Visual Studio Code window with a Python file named `test.py` open. The code defines a function `arrayPairSum` that sorts a list of numbers and returns the sum of the two largest elements. The function is tested with the input `[1, 4, 3, 2]`, and the output is `4`.

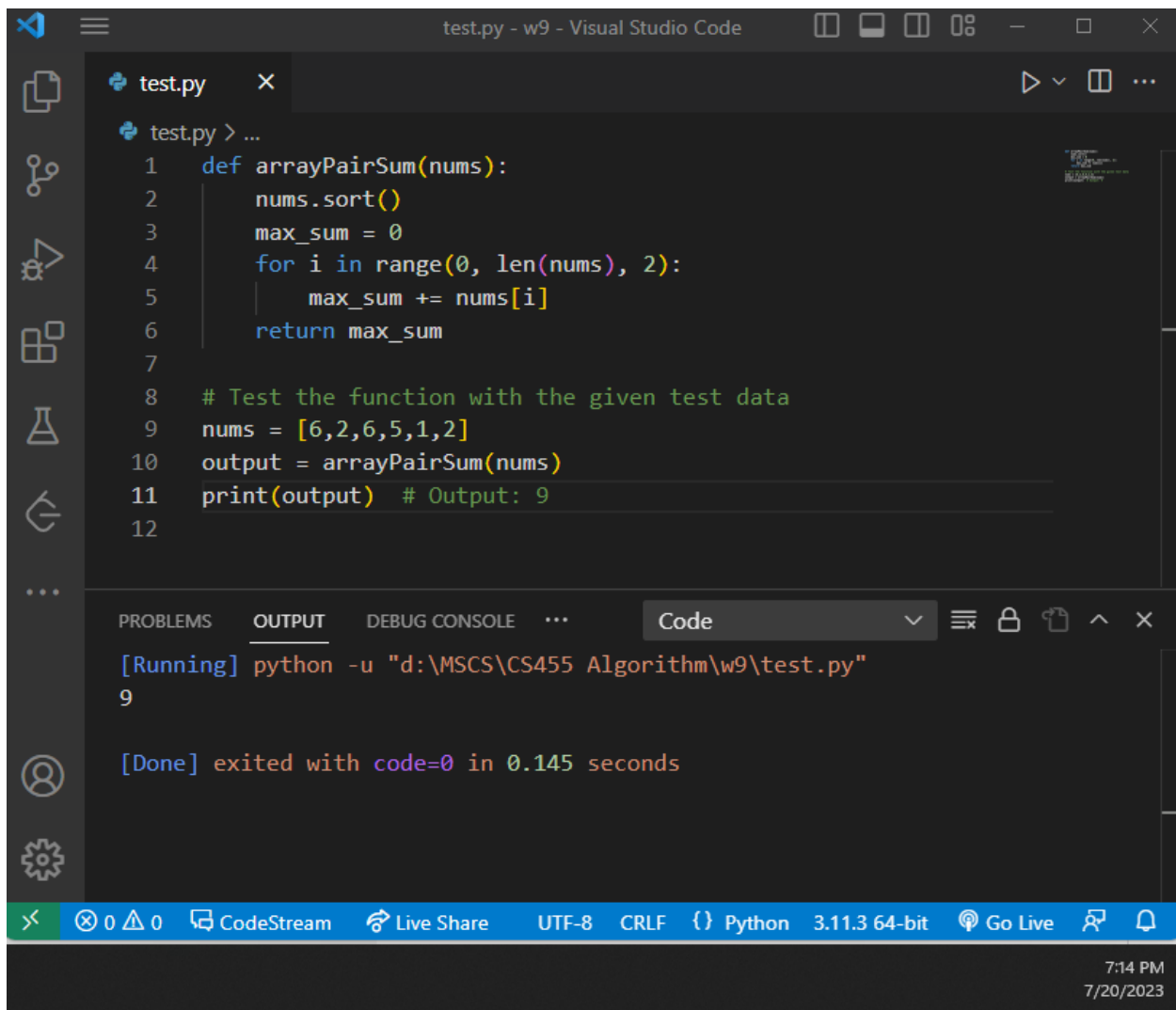
```
test.py > ...
1 def arrayPairSum(nums):
2     nums.sort()
3     max_sum = 0
4     for i in range(0, len(nums), 2):
5         max_sum += nums[i]
6     return max_sum
7
8 # Test the function with the given test data
9 nums = [1, 4, 3, 2]
10 output = arrayPairSum(nums)
11 print(output) # Output: 4
12
```

The output panel shows the execution of the script:

```
[Running] python -u "d:\MSCS\CS455 Algorithm\w9\test.py"
4

[Done] exited with code=0 in 0.129 seconds
```

The status bar at the bottom indicates the file encoding is UTF-8, the line ending is CRLF, the language is Python, and the Python version is 3.11.3 64-bit. The timestamp is 7:12 PM on 7/20/2023.



The image shows a screenshot of the Visual Studio Code editor interface. The main editor window displays a Python file named `test.py`. The code defines a function `arrayPairSum` that sorts a list of numbers and returns the sum of the two largest elements. The function is tested with the input `[6, 2, 6, 5, 1, 2]`, and the output is `9`.

```
test.py > ...
1  def arrayPairSum(nums):
2      nums.sort()
3      max_sum = 0
4      for i in range(0, len(nums), 2):
5          max_sum += nums[i]
6      return max_sum
7
8  # Test the function with the given test data
9  nums = [6, 2, 6, 5, 1, 2]
10 output = arrayPairSum(nums)
11 print(output) # Output: 9
12
```

The bottom panel of the editor shows the **OUTPUT** tab, which displays the execution results:

```
[Running] python -u "d:\MSCS\CS455 Algorithm\w9\test.py"
9

[Done] exited with code=0 in 0.145 seconds
```

The status bar at the bottom indicates the file encoding is UTF-8, the line ending is CRLF, and the Python interpreter is 3.11.3 64-bit. The timestamp in the bottom right corner is 7:14 PM on 7/20/2023.