

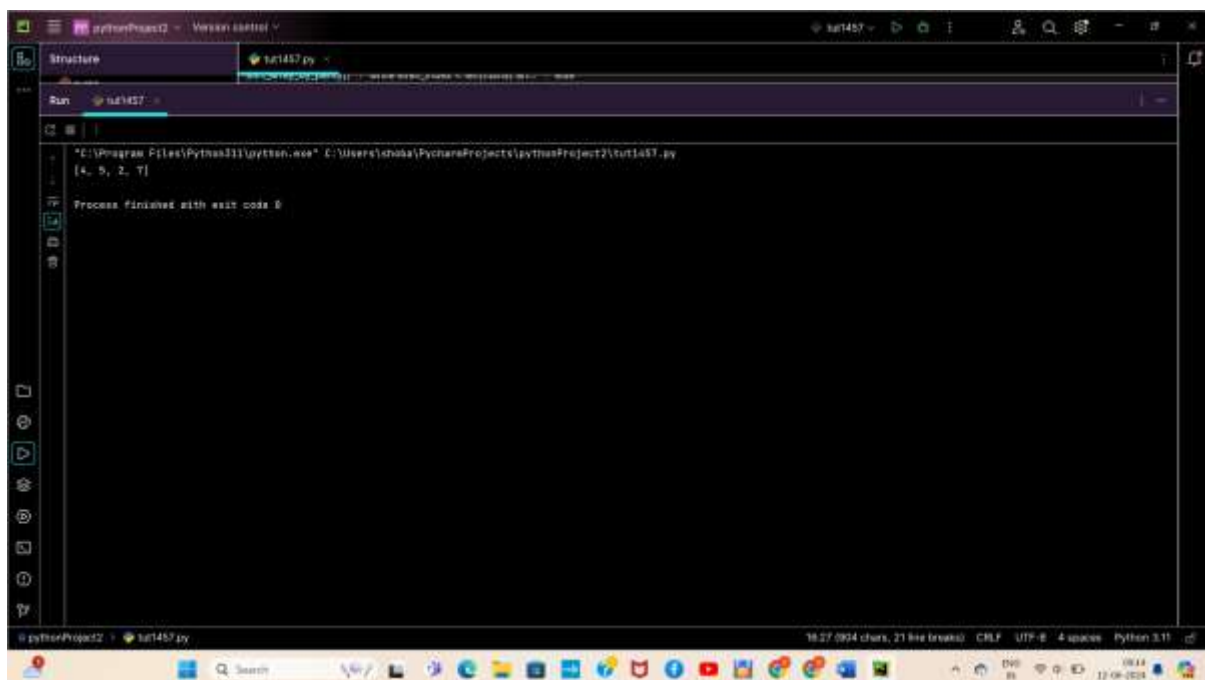
**20.** Sort the array so that whenever `nums[i]` is odd, `i` is odd, and whenever `nums[i]` is even, `i` is even. Return any answer array that satisfies this condition.

### Program:

```
def sort_array_by_parity(nums):
    # Initialize two pointers for even and odd indices
    even_index, odd_index = 0, 1
    # Loop until the even_index is less than the length of nums
    while even_index < len(nums) and odd_index < len(nums):
        # If the number at even_index is even, move to the next even index
        if nums[even_index] % 2 == 0:
            even_index += 2
        # If the number at odd_index is odd, move to the next odd index
        elif nums[odd_index] % 2 == 1:
            odd_index += 2
        # If the number at even_index is odd and the number at odd_index is
        # even, swap them
        else:
            nums[even_index], nums[odd_index] = nums[odd_index],
            nums[even_index]
            even_index += 2
            odd_index += 2
    return nums

# Example usage:
nums = [4, 2, 5, 7]
print(sort_array_by_parity(nums)) # Output: [4, 5, 2, 7] or any other
valid answer
```

Output:

A screenshot of a Python IDE window titled 'pythonProject2'. The main editor shows the code from the previous block. The 'Run' console at the bottom displays the output: '[4, 5, 2, 7]'. Below the output, it says 'Process finished with exit code 0'. The status bar at the bottom indicates '16/27/2024 12:04:04 PM' and 'Python 3.11'.

