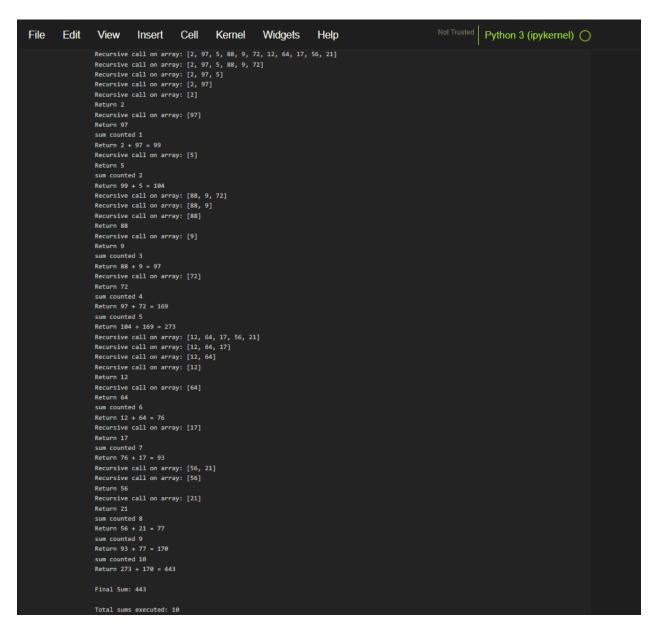
Outputs:

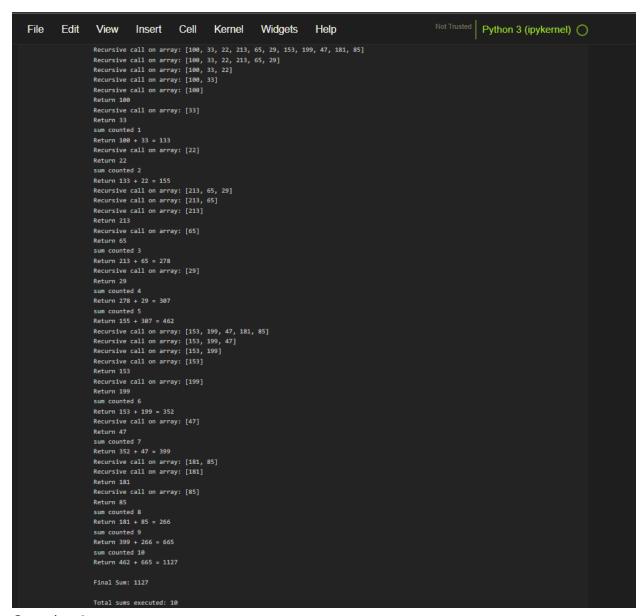
Question 1:

Α

```
Python 3 (ipykernel)
File
        Edit
                  View
                             Insert
                                         Cell
                                                  Kernel
                                                               Widgets
                                                                              Help
                   4 total = array_sum(A, 0, len(A) - 1)
                      print(f"\nFinal Sum: {total}")
                      print(f"\nTotal sums executed: {sum_counter}")
                 Recursive call on array: [38, 21, 39, 60]
Recursive call on array: [38, 21]
                  sum counted 1
                  Recursive call on array: [39]
                 Recursive call on array: [60]
                 Return 60
                 sum counted 2
                 sum counted 3
                  Return 59 + 99 = 158
                  Recursive call on array: [-1, 10, 81, 23]
                 Recursive call on array: [-1, 10]
Recursive call on array: [-1]
                  Return -1
                 Return 10
                  sum counted 4
                  Recursive call on array: [23]
                 sum counted 5
                  sum counted 6
                  Return 158 + 113 = 271
                  Final Sum: 271
                  Total sums executed: 7
```

B:





Question 2:

Α

```
File
          Edit
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                                 Insert
                                                         Kernel
                                                                       Widgets
                                                                                        Help
                                                                                                                                           Python 3 (ipykernel)
                        B = [2, 97, 5, 88, 9, 72, 12, 64, 17, 56, 21]
                    38 C = [100, 33, 22, 213, 65, 29, 153, 199, 47, 181, 85]
                         sorted_array = mergesort(A)
                         print("Sorted Array:", sorted_array)
                   mergesort input array : [38, 21, 39, 60]
mergesort input array : [38, 21]
                    mergesort input array : [38]
                    mergesort output array: [38]
                    mergesort input array : [21]
                    mergesort output array: [21]
                    merge input array : [38], [21]
merge output array : [21, 38]
                    mergesort output array: [21, 38]
                    mergesort input array : [39, 60]
                    mergesort input array : [39]
                    mergesort output array: [39]
                    mergesort input array : [60]
                    mergesort output array: [60]
                    merge input array : [39], [60]
merge output array : [39, 60]
                    mergesort output array: [39, 60]
                    merge input array : [21, 38], [39, 60] merge output array : [21, 38, 39, 60]
                    mergesort output array: [21, 38, 39, 60]
                    mergesort input array : [-1, 10, 81, 23]
                    mergesort input array : [-1, 10]
                    mergesort input array : [-1]
                    mergesort output array: [-1]
                    mergesort input array : [10]
                    mergesort output array: [10]
                    merge input array : [-1], [10]
merge output array : [-1, 10]
                    mergesort output array: [-1, 10]
                    mergesort input array : [81, 23]
                    mergesort input array : [81]
                    mergesort output array: [81]
                    mergesort input array : [23]
                    mergesort output array: [23]
                   merge input array : [81], [23]
merge output array : [23, 81]
                    mergesort output array: [23, 81]
                    merge input array : [-1, 10], [23, 81]
merge output array : [-1, 10, 23, 81]
                    mergesort output array: [-1, 10, 23, 81]
                   merge input array : [21, 38, 39, 60], [-1, 10, 23, 81]
merge output array : [-1, 10, 21, 23, 38, 39, 60, 81]
                    mergesort output array: [-1, 10, 21, 23, 38, 39, 60, 81]
```

File Edit	View Insert Cell Kernel Widgets Help Not Trusted Python 3 (ipykernel)	
	mergesort input array : [2, 97, 5, 88, 9, 72, 12, 64, 17, 56, 21]	
	mergesort input array: [2, 97, 5, 88, 9]	
	mergesort input array : [2, 97] mergesort input array : [2]	
	mergesort output array: [2]	
	mergesort input array : [97]	
	mergesort output array: [97] merge input array : [2], [97]	
	nerge output array : [2, 97]	
	mergesort output array: [2, 97]	
	mergesort input array : [5, 88, 9] mergesort input array : [5]	
	nergesort output array: [5]	
	mergesort input array: [88, 9]	
	mergesort input array : [88]	
	mergesort output array: [88] mergesort input array : [9]	
	mergesort output array: [9]	
	merge input array : [88], [9]	
	merge output array : [9, 88] mergesort output array: [9, 88]	
	nerge input array : [5], [9, 88]	
	merge output array : [5, 9, 88]	
	mergesort output array: [5, 9, 88] merge input array : [2, 97], [5, 9, 88]	
	merge output array : [2, 5, 9, 88, 97]	
	mergesort output array: [2, 5, 9, 88, 97]	
	mergesort input array: [72, 12, 64, 17, 56, 21]	
	mergesort input array : [72, 12, 64] mergesort input array : [72]	
	mergesort output array: [72]	
	mergesort input array : [12, 64]	
	mergesort input array : [12] mergesort output array: [12]	
	mergesort input array : [64]	
	mergesort output array: [64]	
	merge input array : [12], [64] merge output array : [12, 64]	
	nergesort output array: [12, 64]	
	merge input array : [72], [12, 64]	
	merge output array : [12, 64, 72] mergesort output array: [12, 64, 72]	
	mergesort input array: [12, 64, 72]	
	mergesort input array : [17]	
	mergesort output array: [17]	
	mergesort input array : [56, 21] mergesort input array : [56]	
	mergesort output array: [56]	
	mergesort input array : [21]	
	mergesort output array: [21] merge input array : [56], [21]	
	merge output array : [21, 56]	
	mergesort output array: [21, 56]	
	merge input array : [17], [21, 56] merge output array : [17, 21, 56]	
	mergesort output array: [17, 21, 56]	
	merge input array : [12, 64, 72], [17, 21, 56]	
	merge output array : [12, 17, 21, 56, 64, 72] mergesort output array: [12, 17, 21, 56, 64, 72]	
	merge input array : [2, 5, 9, 88, 97], [12, 17, 21, 56, 64, 72]	
	merge output array : [2, 5, 9, 12, 17, 21, 56, 64, 72, 88, 97]	
	mergesort output array: [2, 5, 9, 12, 17, 21, 56, 64, 72, 88, 97] Sorted Array: [2, 5, 9, 12, 17, 21, 56, 64, 72, 88, 97]	