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1.

Sorting.py

```
array1 = [23, 89, 7, 56, 44]
print("1. Implement the Bubble Sort Algorithm for the Dataset and sort the data into ascending order")
print(array1)
for i in range(len(array1)):
    for j in range(0, len(array1) - i - 1):
        if array1[j] > array1[j + 1]: # change the condition from ascending to descending
            array1[j], array1[j + 1] = array1[j + 1], array1[j]
print("Bubble Sorted Ascending: ")
print(array1)
print()
```

Output:

```
C:\Users\Longalong_m.F213\PycharmProjects\SortingAlgorithms\.venv\Scripts\python.exe C:\Users\L
1. Implement the Bubble Sort Algorithm for the Dataset and sort the data into ascending order
[23, 89, 7, 56, 44]
Bubble Sorted Ascending:
[7, 23, 44, 56, 89]
```

2.

```
array2 = [12, 78, 91, 34, 62]
print("2. Implement theInsertion Sort Algorithm for the Dataset and sort the data into ascending order.")
print(array2)
for i in range(1, len(array2)):
        key = array2[i]
        j = i - 1
        while j >= 0 and key < array2[j]: # change the condition from ascending to descending
            array2[j + 1] = array2[j]
            j -= 1
        array2[j + 1] = key
print("Insertion Sorted Ascending :")
print(array2)
print()
```

Output:

```
2. Implement theInsertion Sort Algorithm for the Dataset and sort the data into ascending order.
[12, 78, 91, 34, 62]
Insertion Sorted Ascending :
[12, 34, 62, 78, 91]
```

3.

```
array3 = [5, 99, 48, 15, 67]
print("3. Implement the Selection Sort Algorithm for the Dataset and sort the data into descending order.")
print(array3)
n = len(array3)
for i in range(n):
    max_idx = i
    for j in range(i + 1, n):
        if array3[j] > array3[max_idx]:
            max_idx = j
    array3[i], array3[max_idx] = array3[max_idx], array3[i]
print("Selection Sorted Descending: ")
print(array3)
print()
```

Output:

```
3. Implement the Selection Sort Algorithm for the Dataset and sort the data into descending order.
[5, 99, 48, 15, 67]
Selection Sorted Descending:
[99, 67, 48, 15, 5]
```

4.

```
array4 = [38, 82, 25, 74, 13]
print("4. Implement the Insertion Sort Algorithm for the Dataset and sort the data into descending order.")
print(array4)
for i in range(1, len(array4)):
        key = array4[i]
        j = i - 1
        while j >= 0 and key > array4[j]:
            array4[j + 1] = array4[j]
            j -= 1
        array4[j + 1] = key
print("Insertion Sorted Descending: ")
print(array4)
print()
```

Output:

```
4. Implement the Insertion Sort Algorithm for the Dataset and sort the data into descending order.
[38, 82, 25, 74, 13]
Insertion Sorted Descending:
[82, 74, 38, 25, 13]
```

5.

```
print("5. Sort the data into ascending order and descending order each order of the dataset is inserted into a separate list/array.")
copied_values = [array1[2], array1[3],
                 array3[2], array3[3],
                 array4[2], array4[3]]
ascending_sorted = sorted(copied_values)
print("Ascending Sorted Values:", ascending_sorted)
descending_sorted = sorted(copied_values, reverse=True)
print("Descending Sorted Values:", descending_sorted)
print()
```

Output:

```
5. Sort the data into ascending order and descending order each order of the dataset is inserted into a separate list/array.
Ascending Sorted Values: [15, 25, 38, 44, 48, 56]
Descending Sorted Values: [56, 48, 44, 38, 25, 15]
```

6.

```
print("6. Implement the Selection Sort Algorithm and sort the data into ascending order.")
combined_array = array1 + array2 + array3 + array4
1 usage
def selection_sort_ascending(arr):
    n = len(arr)
    for i in range(n):
        min_idx = i
        for j in range(i + 1, n):
            if arr[j] < arr[min_idx]:
                min_idx = j
        arr[i], arr[min_idx] = arr[min_idx], arr[i]
sorted_combined_array = selection_sort_ascending(combined_array)
print("Selection Sorted Combined Dataset Ascending: ")
print(array1 + array2 + array3 + array4)
print()
```

Output:

```
6. Implement the Selection Sort Algorithm and sort the data into ascending order.
Selection Sorted Combined Dataset Ascending:
[7, 23, 44, 56, 89, 12, 34, 62, 78, 91, 99, 67, 48, 15, 5, 82, 74, 38, 25, 13]
```

7.

```
print("7. Print the even and odd values of the list/array created in item number.")
even_values = [i for i in sorted_combined_array if i % 2 == 0]
odd_values = [i for i in sorted_combined_array if i % 2 != 0]
print("Even Values:", even_values)
print("Odd Values:", odd_values)
```

Output:

```
7. Print the even and odd values of the list/array created in item number.
Even Values: [12, 34, 38, 44, 48, 56, 62, 74, 78, 82]
Odd Values: [5, 7, 13, 15, 23, 25, 67, 89, 91, 99]

Process finished with exit code 0
```