)1

```
1
2       arr1 = [23,89, 7, 56, 44]
3       print("1)arr1 values before Bubble sort")
4       print(arr1)
5       for i in range(len(arr1)):
6           for j in range(0,len(arr1)-i-1):
7               if arr1[j] > arr1[j+1]:
8                   arr1[j],arr1[j+1] = arr1[j+1],arr1[j]
9       print("arr1 values after bubble sort")
10      print(arr1)
```

```
Z:\FG\sortingArgorithm\.venv\Scripts\
1)arr1 values before Bubble sort
[23, 89, 7, 56, 44]
arr1 values after bubble sort
[7, 23, 44, 56, 89]
```

2)

```
13      print()
14      arr2 = [12, 78, 91, 34, 62]
15      print("2)arr2 values before Insertion sort")
16      print(arr2)
17      for i in range(1, len(arr2)):
18          key = arr2[i]
19          j = i - 1
20          while j >= 0 and key < arr2[j]:
21              arr2[j + 1] = arr2[j]
22              j -= 1
23          arr2[j + 1] = key
24      print("arr2 values after insertion sort")
25      print(arr2)
26
```

```
2)arr2 values before Insertion sort
[12, 78, 91, 34, 62]
arr2 values after insertion sort
[12, 34, 62, 78, 91]
```

3)

```python
    print()
29  arr3 = [5, 99, 48, 15, 67]
30  print("3)arr3 values before Selection sort")
31  print(arr3)
32  for i in range(len(arr3)):
33      min_idx = i
34      for j in range(i+1,len(arr3)):
35          if arr3[min_idx] < arr3[j]:
36              min_idx = j
37          arr3[i], arr3[min_idx] = arr3[min_idx], arr3[i]
38  print("arr3 values after selection sort")
39  print(arr3)
40
```

```
3)arr3 values before Selection sort
[5, 99, 48, 15, 67]
arr3 values after selection sort
[99, 67, 48, 15, 5]
```

4)

```
42      print()
43      arr4 = [38, 82, 25, 74, 13]
44      print("4)arr4 values before Selection sort")
45      print(arr4)
46      for i in range(1, len(arr4)):
47          key = arr4[i]
48          j = i - 1
49          while j >= 0 and key > arr4[j]:
50              arr4[j + 1] = arr4[j]
51              j -= 1
52          arr4[j + 1] = key
53      print("arr4 values after insertion sort")
54      print(arr4)
```

```
4)arr4 values before Selection sort
[38, 82, 25, 74, 13]
arr4 values after insertion sort
[82, 74, 38, 25, 13]
```

5)

```python
print()
print("5)values from the second index and third index of the previous datasets into one dataset")
arr5 = [arr[2] for arr in [arr1,arr2,arr3,arr4]]
for arr in [arr1,arr2,arr3,arr4]:
    arr5.append(arr[3])
print(arr5)
print("Ascending order of the dataset")
for i in range(len(arr5)):
    min_idx = i
    for j in range(i+1,len(arr5)):
        if arr5[min_idx] > arr5[j]:
            min_idx = j
    arr5[i], arr5[min_idx] = arr5[min_idx], arr5[i]
print(arr5)
print("Descending order of the dataset")
arr6 = [arr[2] for arr in [arr1,arr2,arr3,arr4]]
for arr in [arr1,arr2,arr3,arr4]:
    arr6.append(arr[3])
print(arr6)
for i in range(len(arr6)):
    min_idx = i
    for j in range(i+1,len(arr6)):
        if arr6[min_idx] < arr6[j]:
            min_idx = j
    arr6[i], arr6[min_idx] = arr6[min_idx], arr6[i]
print(arr6)
```

```
5)values from the second index and third index of the previous datasets into one dataset
[44, 62, 48, 38, 56, 78, 15, 25]
Ascending order of the dataset
[15, 25, 38, 44, 48, 56, 62, 78]
Descending order of the dataset
[44, 62, 48, 38, 56, 78, 15, 25]
[78, 62, 56, 48, 44, 38, 25, 15]
```

6)

```python
84      print()
85      dataset = []
86      for arr in [arr1,arr2,arr3,arr4]:
87          dataset.extend(arr)
88      print("6)copying all of the values from item number 1 to 4")
89      print(dataset)
90      for i in range(len(dataset)):
91          min_idx = i
92          for j in range(i+1,len(dataset)):
93              if dataset[min_idx] > dataset[j]:
94                  min_idx = j
95          dataset[i], dataset[min_idx] = dataset[min_idx], dataset[i]
96      print("dataset values after selection sort")
97      print(dataset)
```

```
6)copying all of the values from item number 1 to 4

[7, 23, 44, 56, 89, 12, 34, 62, 78, 91, 99, 67, 48, 15, 5, 82, 74, 38, 25, 13]

dataset values after selection sort

[5, 7, 12, 13, 15, 23, 25, 34, 38, 44, 48, 56, 62, 67, 74, 78, 82, 89, 91, 99]
```

7)

```
 99     print()

100     print("7)Print the even and odd values of the list/array created in item number 6.")

101     EvenNum = [num for num in dataset if num%2==0]

102     OddNum = [num for num in dataset if num%2!=0]

103

104     print("Even Numbers")

105     print(EvenNum)

106     print("Odd Numbers")

107     print(OddNum)

108
```

```
7)Print the even and odd values of the list/array created in item number 6.
Even Numbers
[12, 34, 38, 44, 48, 56, 62, 74, 78, 82]
Odd Numbers
[5, 7, 13, 15, 23, 25, 67, 89, 91, 99]
```