WK04\selectionSort.py

```
1   x = [13,86,35,1,100,45,11,6,67,65,2,7,23,23,23,87,38,67,31,99,1,1,100]
2   y = [13,86,35,1,100,45,11,6,67,65,2,7,23,23,23,87,38,67,31,99,1,1,100]
3
4   def selectionSort(arr):
5       for i in range(0, len(arr)-1, 1):
6           for j in range(i+1, len(arr)-1, 1):
7               if arr[j] < arr[i]:
8                   arr[j], arr[i] = arr[i], arr[j]
9
10  def revSelectionSort(arr):
11      for i in range(0, len(arr)-1, 1):
12          for j in range(i+1, len(arr)-1, 1):
13              if arr[j] > arr[i]:
14                  arr[j], arr[i] = arr[i], arr[j]
15
16  print("unsorted:\t", x)
17  selectionSort(x)
18  print("selectionSort:\t", x)
19  print("Python sort:\t", sorted(y))
```

WK04\InsertionSort.py

```python
 1  x = [13,86,35,1,100,45,11,6,67,65,2,7,23,23,23,87,38,67,31,99,1,1,100]
 2  y = [13,86,35,1,100,45,11,6,67,65,2,7,23,23,23,87,38,67,31,99,1,1,100]
 3
 4  def insertionSort(arr):
 5      for i in range(1, len(arr), 1):
 6          val = arr[i]
 7          for j in range(i-1, -1, -1):
 8              if arr[j] > val:
 9                  arr[j], arr[j+1] = arr[j+1], arr[j]
10              else:
11                  break
12
13  print("unsorted:\t", x)
14  insertionSort(x)
15  print("insertionSort:\t", x)
16  print("Python sort:\t", sorted(y))
```

WK04\shellSort.py

```python
x = [13,86,35,1,100,45,11,6,67,65,2,7,23,23,23,87,38,67,31,99,1,1,100]
y = [13,86,35,1,100,45,11,6,67,65,2,7,23,23,23,87,38,67,31,99,1,1,100]

def shellSort(arr):
    gap = len(arr)//2
    while gap > 0:
        for i in range(0, len(arr)-gap, 1):
            if arr[i] > arr[i+gap]:
                arr[i], arr[i+gap] = arr[i+gap], arr[i]
                for j in range(i, gap-1, -gap):
                    if arr[j] < arr[j-gap]:
                        arr[j], arr[j-gap] = arr[j-gap], arr[j]
                    else:
                        break
        gap = gap//2

print("unsorted:\t", x)
shellSort(x)
print("shellSort:\t", x)
print("Python sort:\t",sorted(y))
```

WK04\quickSort.py

```python
x = [13,86,35,1,100,45,11,6,67,65,2,7,23,23,23,87,38,67,31,99,1,1,100]
y = [13,86,35,1,100,45,11,6,67,65,2,7,23,23,23,87,38,67,31,99,1,1,100]

def quickSort(arr):
    if len(arr) <= 0:
        return arr

    pivot_i = len(arr)//2
    pivot = arr[pivot_i]
    left, mid, right = [], [], []

    for i in arr:
        if i < pivot:
            left += [i]

    for j in arr:
        if j == pivot:
            mid += [j]

    for k in arr:
        if k > pivot:
            right += [k]

    return quickSort(left) + mid + quickSort(right)

print("unsorted:\t", x)
print("quickSort:\t", quickSort(x))
print("Python sort:\t",sorted(y))
```

```
ll2024\CS210> & C:/Users/User01/AppData/Local/Programs/Python/Python312/python.exe "g:/My Drive/School/01_Fall2024/CS2
5, 1, 100, 45, 11, 6, 67, 65, 2, 7, 23, 23, 23, 87, 38, 67, 31, 99, 1, 1, 100]
2, 6, 7, 11, 13, 23, 23, 23, 31, 35, 38, 45, 65, 67, 67, 86, 87, 99, 100, 100]
2, 6, 7, 11, 13, 23, 23, 23, 31, 35, 38, 45, 65, 67, 67, 86, 87, 99, 100, 100]
ll2024\CS210> & C:/Users/User01/AppData/Local/Programs/Python/Python312/python.exe "g:/My Drive/School/01_Fall2024/CS2
5, 1, 100, 45, 11, 6, 67, 65, 2, 7, 23, 23, 23, 87, 38, 67, 31, 99, 1, 1, 100]
2, 6, 7, 11, 13, 23, 23, 23, 31, 35, 38, 45, 65, 67, 67, 86, 87, 99, 100, 100]
2, 6, 7, 11, 13, 23, 23, 23, 31, 35, 38, 45, 65, 67, 67, 86, 87, 99, 100, 100]
ll2024\CS210> & C:/Users/User01/AppData/Local/Programs/Python/Python312/python.exe "g:/My Drive/School/01_Fall2024/CS2
5, 1, 100, 45, 11, 6, 67, 65, 2, 7, 23, 23, 23, 87, 38, 67, 31, 99, 1, 1, 100]
2, 6, 7, 11, 13, 23, 23, 23, 31, 35, 38, 45, 65, 67, 67, 86, 87, 99, 100, 100]
2, 6, 7, 11, 13, 23, 23, 23, 31, 35, 38, 45, 65, 67, 67, 86, 87, 99, 100, 100]
ll2024\CS210> & C:/Users/User01/AppData/Local/Programs/Python/Python312/python.exe "g:/My Drive/School/01_Fall2024/CS2
5, 1, 100, 45, 11, 6, 67, 65, 2, 7, 23, 23, 23, 87, 38, 67, 31, 99, 1, 1, 100]
2, 6, 7, 11, 13, 23, 23, 23, 31, 35, 38, 45, 65, 67, 67, 86, 87, 99, 100, 100]
2, 6, 7, 11, 13, 23, 23, 23, 31, 35, 38, 45, 65, 67, 67, 86, 87, 99, 100, 100]
ll2024\CS210>
```