CSC108H Worksheet: Sorting Algorithms

1. The list [4, 2, 5, 6, 7, 3, 1] is shown below after each pass of a sorting algorithm:

   [1, 2, 5, 6, 7, 3, 4]
   [1, 2, 5, 6, 7, 3, 4]
   [1, 2, 3, 6, 7, 5, 4]
   [1, 2, 3, 4, 7, 5, 6]
   [1, 2, 3, 4, 5, 7, 6]
   [1, 2, 3, 4, 5, 6, 7]
   [1, 2, 3, 4, 5, 6, 7]

Which sorting algorithm is being executed?

(a) bubble sort
(b) selection sort
(c) insertion sort

2. The list [4, 2, 5, 6, 7, 3, 1] is shown below after each pass of a sorting algorithm:

   [2, 4, 5, 6, 3, 1, 7]
   [2, 4, 5, 3, 1, 6, 7]
   [2, 4, 3, 1, 5, 6, 7]
   [2, 3, 1, 4, 5, 6, 7]
   [2, 1, 3, 4, 5, 6, 7]
   [1, 2, 3, 4, 5, 6, 7]
   [1, 2, 3, 4, 5, 6, 7]

Which sorting algorithm is being executed?

(a) bubble sort
(b) selection sort
(c) insertion sort

3. The list [4, 2, 5, 6, 7, 3, 1] is shown below after each pass of a sorting algorithm:

   [4, 2, 5, 6, 7, 3, 1]
   [2, 4, 5, 6, 7, 3, 1]
   [2, 4, 5, 6, 7, 3, 1]
   [2, 4, 5, 6, 7, 3, 1]
   [2, 4, 5, 6, 7, 3, 1]
   [2, 3, 4, 5, 6, 7, 1]
   [1, 2, 3, 4, 5, 6, 7]

Which sorting algorithm is being executed?

(a) bubble sort
(b) selection sort
(c) insertion sort
4. List \([8, 2, 8, 7, 3, 1, 2]\) is being sorted using bubble sort. Fill in the blanks to show the list after each pass.

After the 1st pass: \([2, 8, 7, 3, 1, 2, 8]\)
After the 2nd pass: \([2, 7, 3, 1, 2, 8, 8]\)
After the 3rd pass: \([2, 3, 1, 2, 7, 8, 8]\)
After the 4th pass: 
After the 5th pass: 
After the 6th pass: 

5. List \([1, 5, 8, 7, 6, 1, 7]\) is being sorted using selection sort. Fill in the blanks to show the list after each pass.

After the 1st pass: \([1, 5, 8, 7, 6, 1, 7]\)
After the 2nd pass: \([1, 1, 8, 7, 6, 5, 7]\)
After the 3rd pass: \([1, 1, 5, 7, 6, 8, 7]\)
After the 4th pass: 
After the 5th pass: 
After the 6th pass: 
After the 7th pass: 

6. List \([6, 8, 2, 1, 1, 9, 4]\) is being sorted using insertion sort. Fill in the blanks to show the list after each pass.

After the 1st pass: \([6, 8, 2, 1, 1, 9, 4]\)
After the 2nd pass: \([6, 8, 2, 1, 1, 9, 4]\)
After the 3rd pass: \([2, 6, 8, 1, 1, 9, 4]\)
After the 4th pass: 
After the 5th pass: 
After the 6th pass: 
After the 7th pass: 