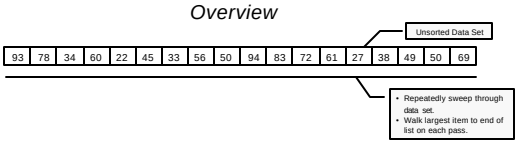
CST8130: Data Structures

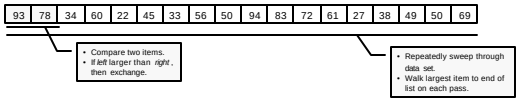
Bubble Sort

Created by Rex Woollard

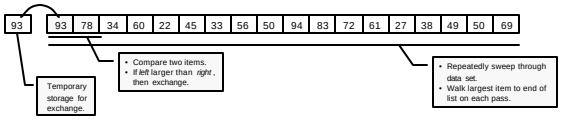
Overview



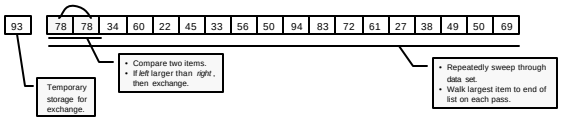
Pass 1.0



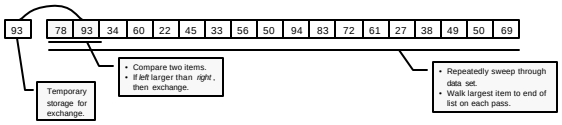
Pass 1.1



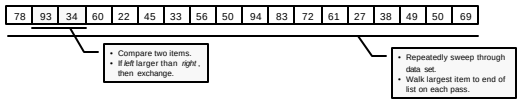
Pass 1.2



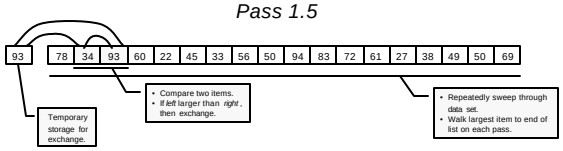
Pass 1.3



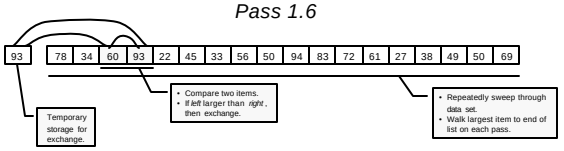
Pass 1.4



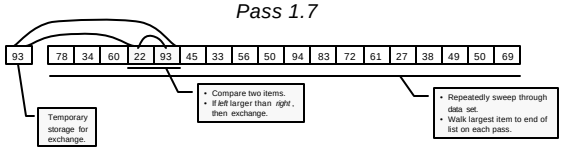
Pass 1.5



Pass 1.6

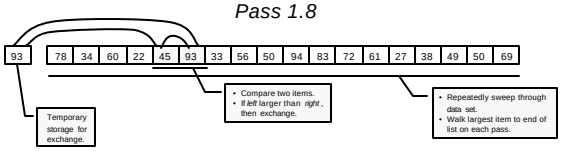


Pass 1.7



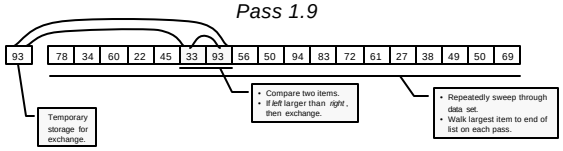
No sound for this slide.

Pass 1.8



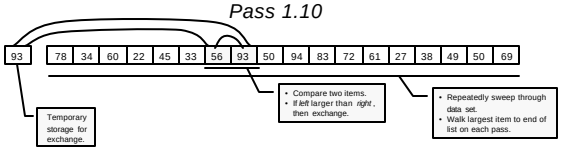
No sound for this slide.

Pass 1.9



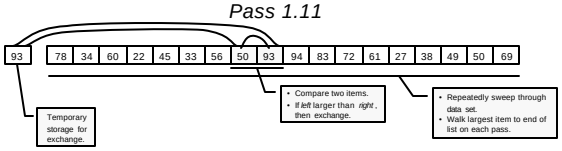
No sound for this slide.

Pass 1.10



No sound for this slide.

Pass 1.11

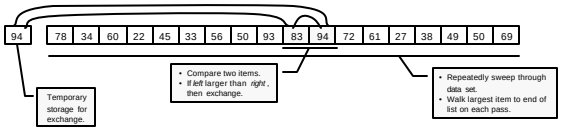


No sound for this slide.

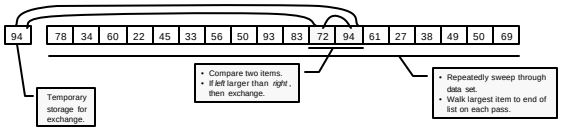
Pass 1.12

There is a recorded explanation for this slide.

Pass 1.13

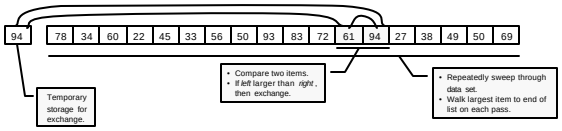


Pass 1.14



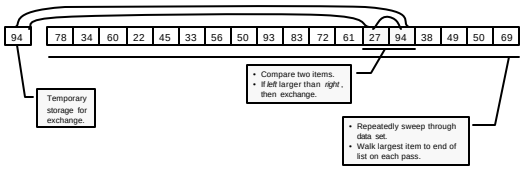
No sound for this slide.

Pass 1.15



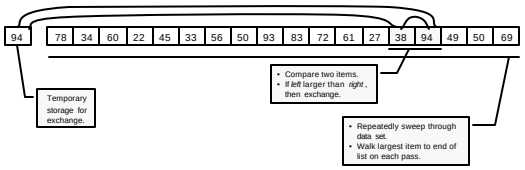
No sound for this slide.

Pass 1.16



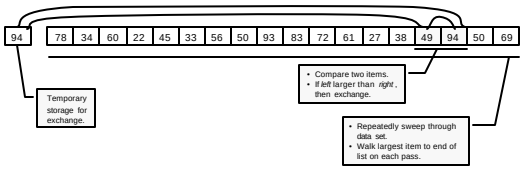
No sound for this slide.

Pass 1.17



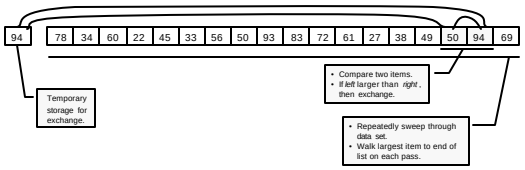
No sound for this slide.

Pass 1.18



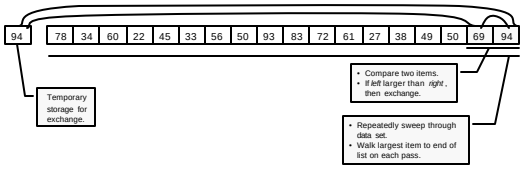
No sound for this slide.

Pass 1.19



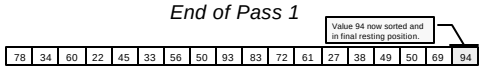
No sound for this slide.

Pass 1.20

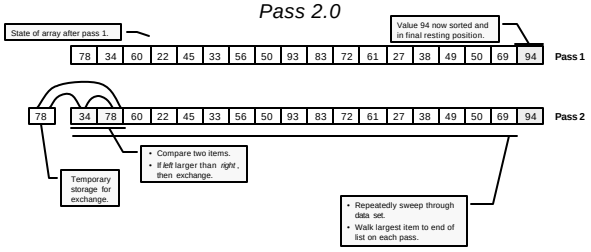


No sound for this slide.

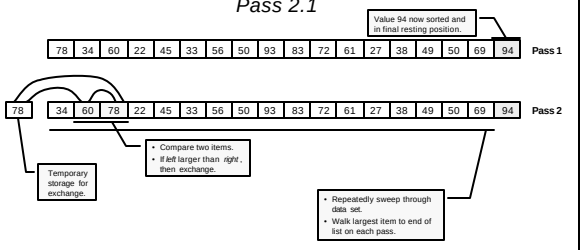
End of Pass 1



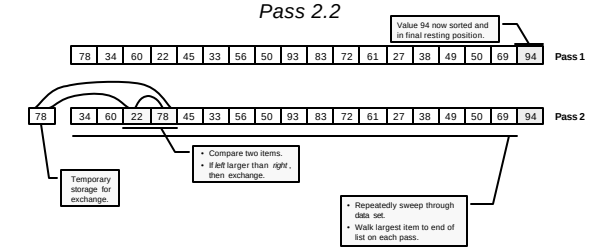
Pass 2.0



Pass 2.1

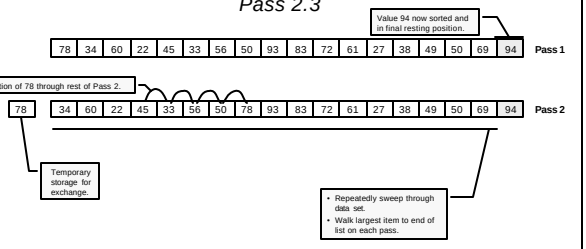


Pass 2.2

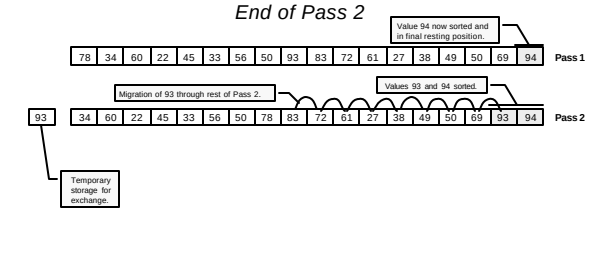


No sound for this slide.

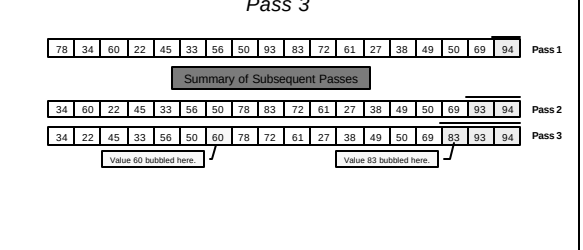
Pass 2.3



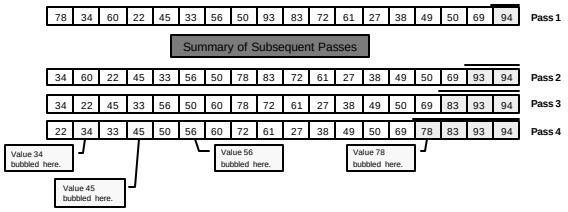
End of Pass 2



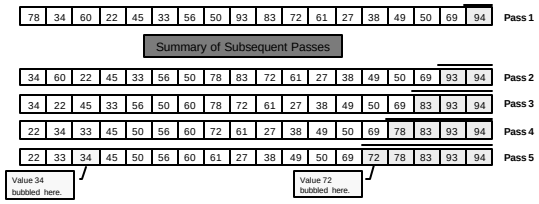
Pass 3



Pass 4

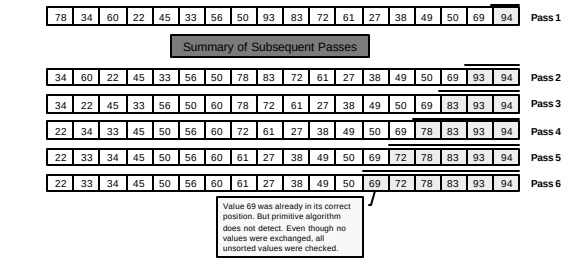


Pass 5

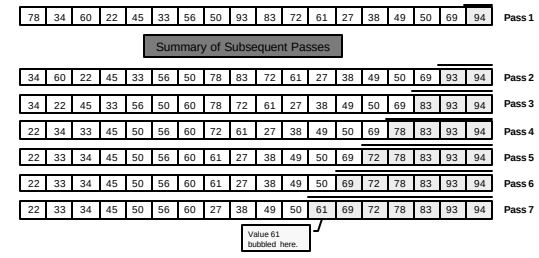


No sound for this slide.

Pass 6

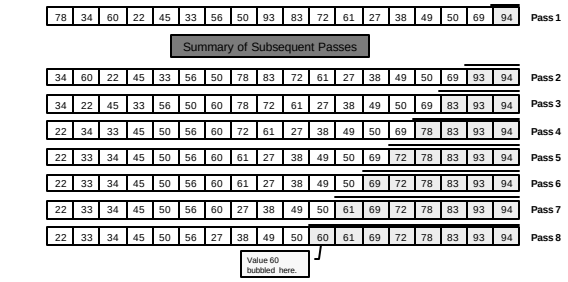


Pass 7



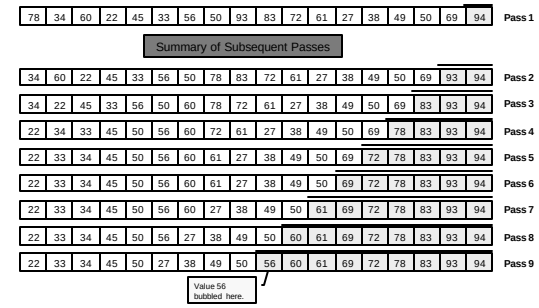
No sound for this slide.

Pass 8



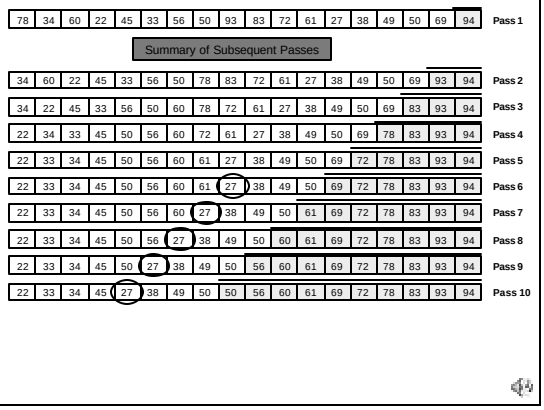
No sound for this slide.

Pass 9

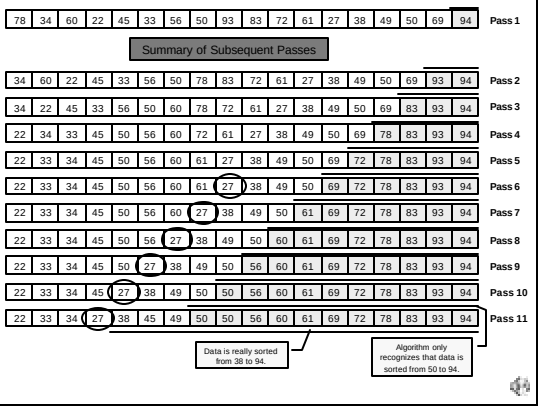


No sound for this slide.

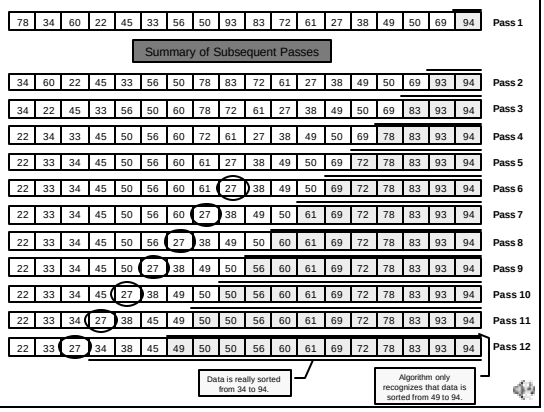
Slow, Repeated Movement of Data: 1



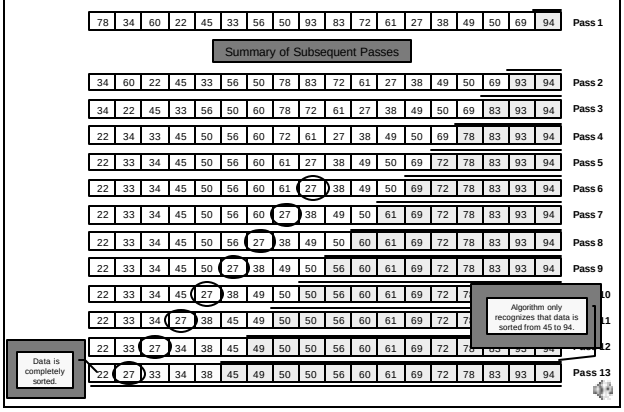
Slow, Repeated Movement of Data: 2



Slow, Repeated Movement of Data: 3



Slow, Repeated Movement of Data: 4



Algorithm Essentials

Conceptually, divide the list into sorted and unsorted parts.

Outer Loop

Each pass results in next largest item *bubbling* to top.

One item becomes part of sorted portion of list.

Inner Loop

- Compare adjacent items in unsorted portion of list
- Exchange items if item on left is larger than item on right
- Exchange requires 3 assignments and use of a temporary variable.

Observations about Efficiency

Each movement of one element from the unsorted part into the sorted part is considered one pass.

Given n elements, need $n - 1$ passes.

Efficiency: Two nested counting loops: $O(n^2)$