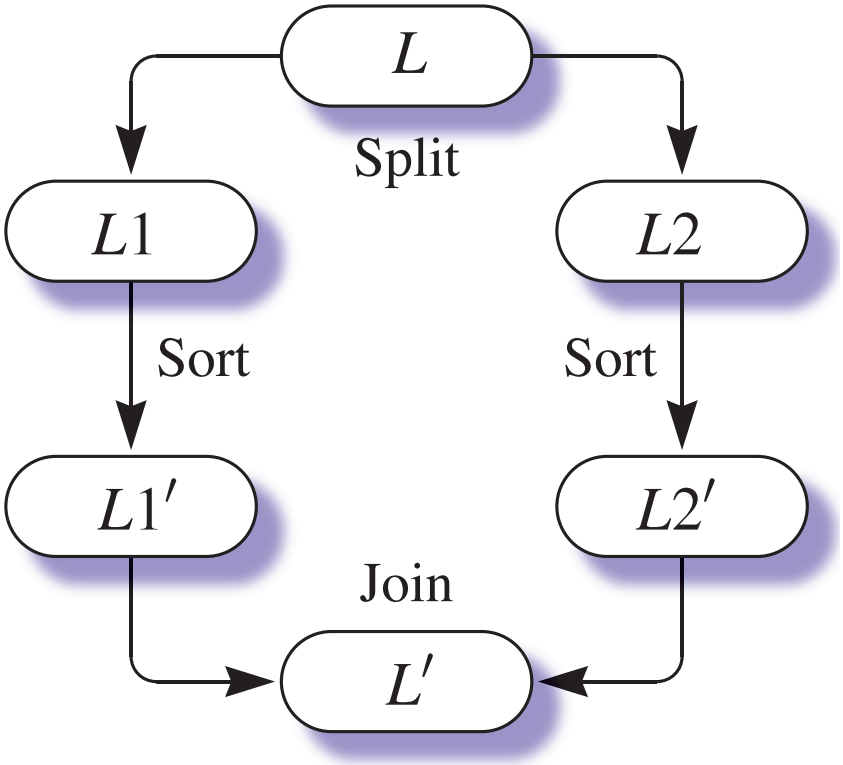
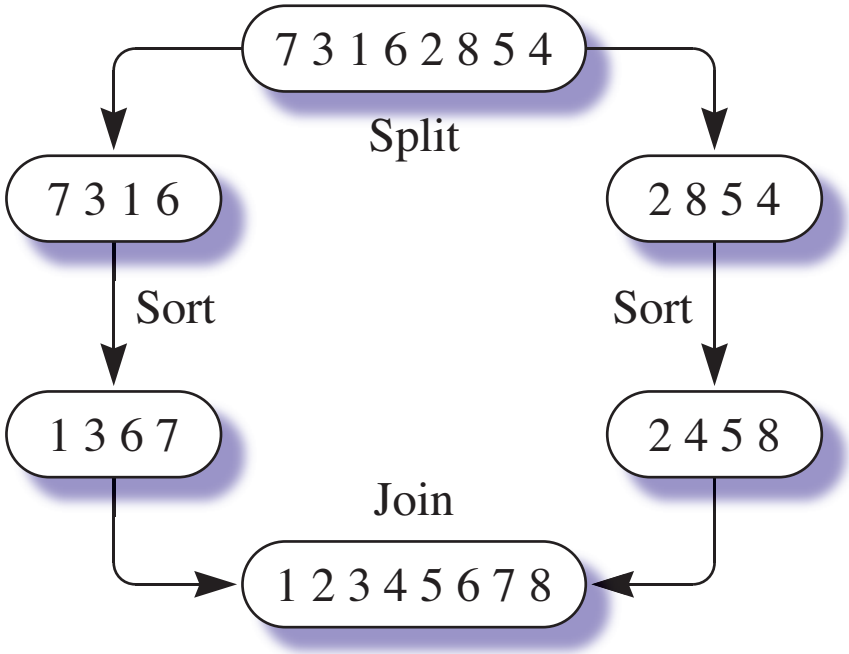
Comparison Sort Algorithms

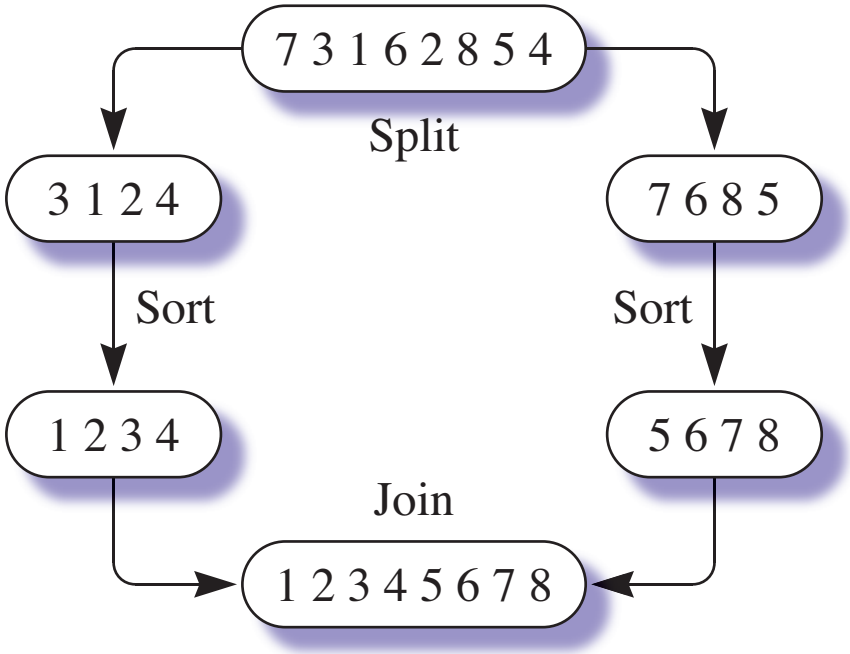
The Merritt Sort Taxonomy

Figure 4.1

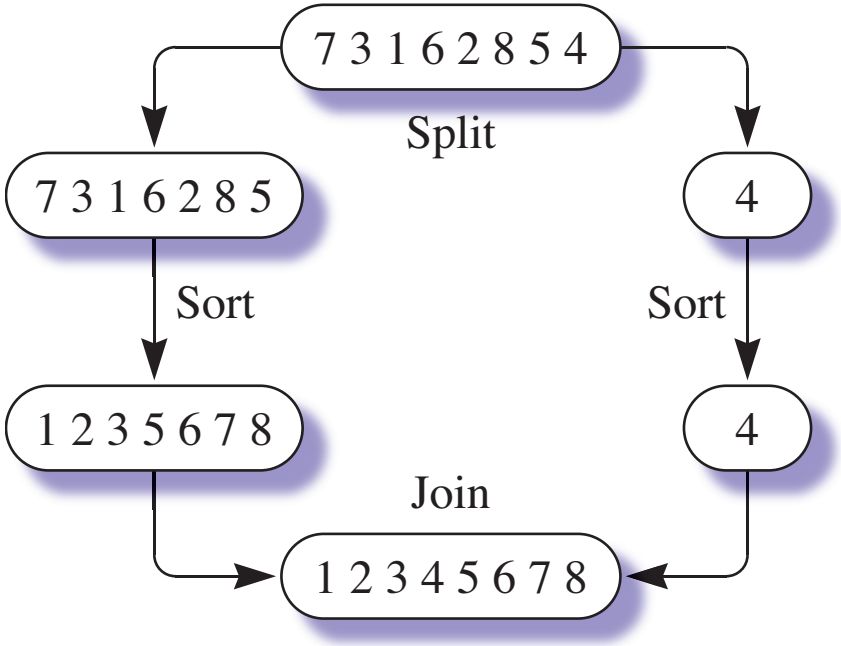




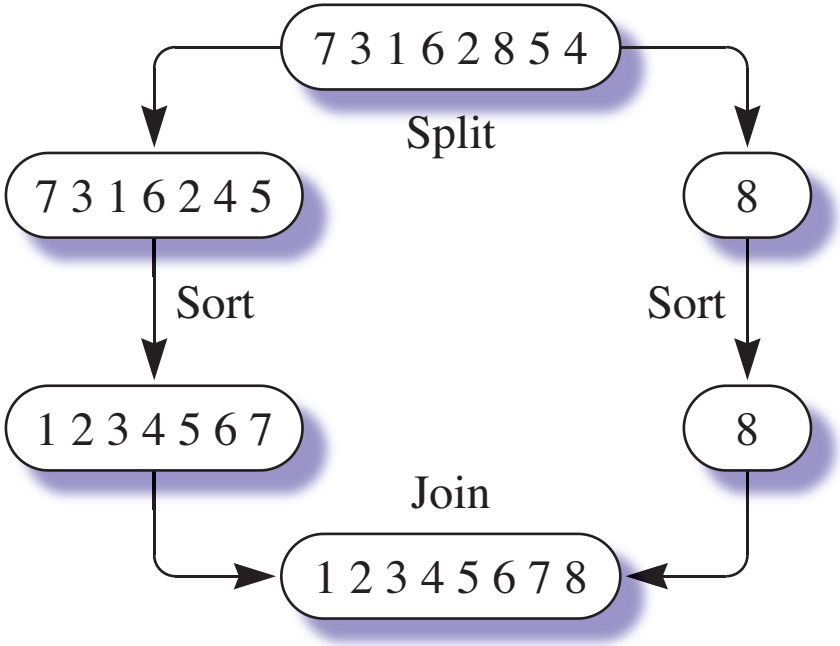
(a) The merge sort algorithm.



(b) The quick sort algorithm.



(a) The insertion sort algorithm.



(b) The selection sort algorithm.

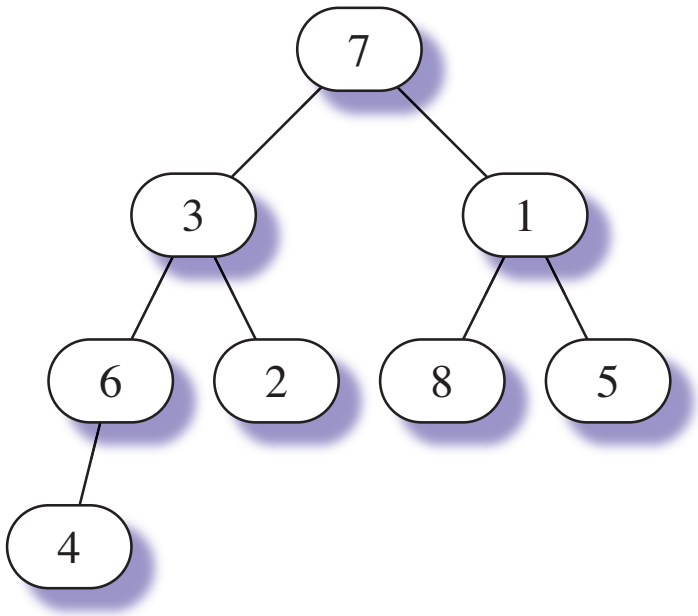
The definition of a heap

A heap is a binary tree.

- It has a max-heap shape.
- It has a max-heap order.

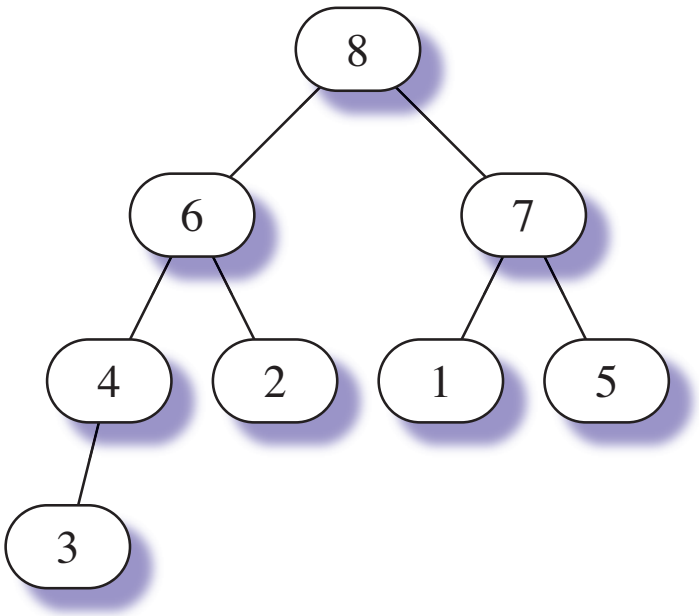
Max-heap order:

For every node other than the root, the value of the node is at most the value of its parent.



7	3	1	6	2	8	5	4

(a) The initial list is not a heap.

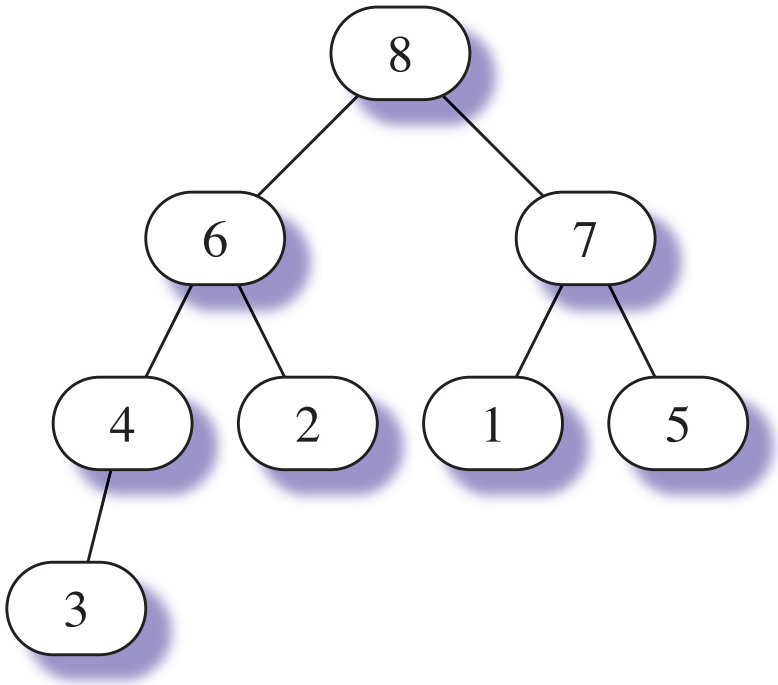


8	6	7	4	2	1	5	3

(b) List L after build heap.

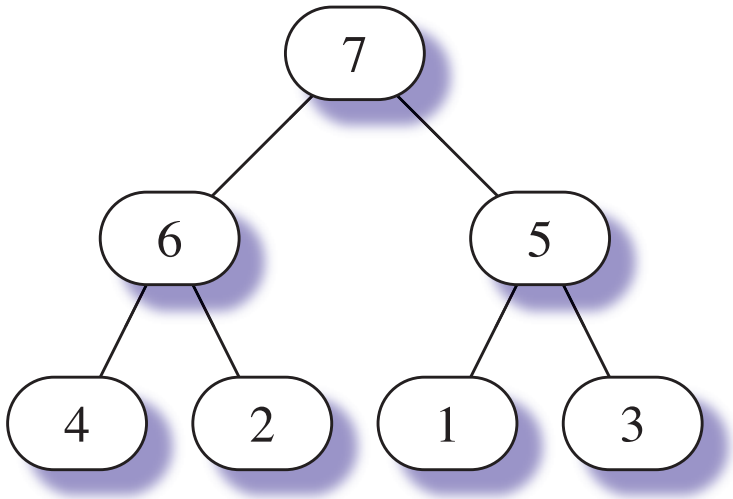
Max-heap shape
Not max-heap order

Max-heap shape
Max-heap order



8	6	7	4	2	1	5	3

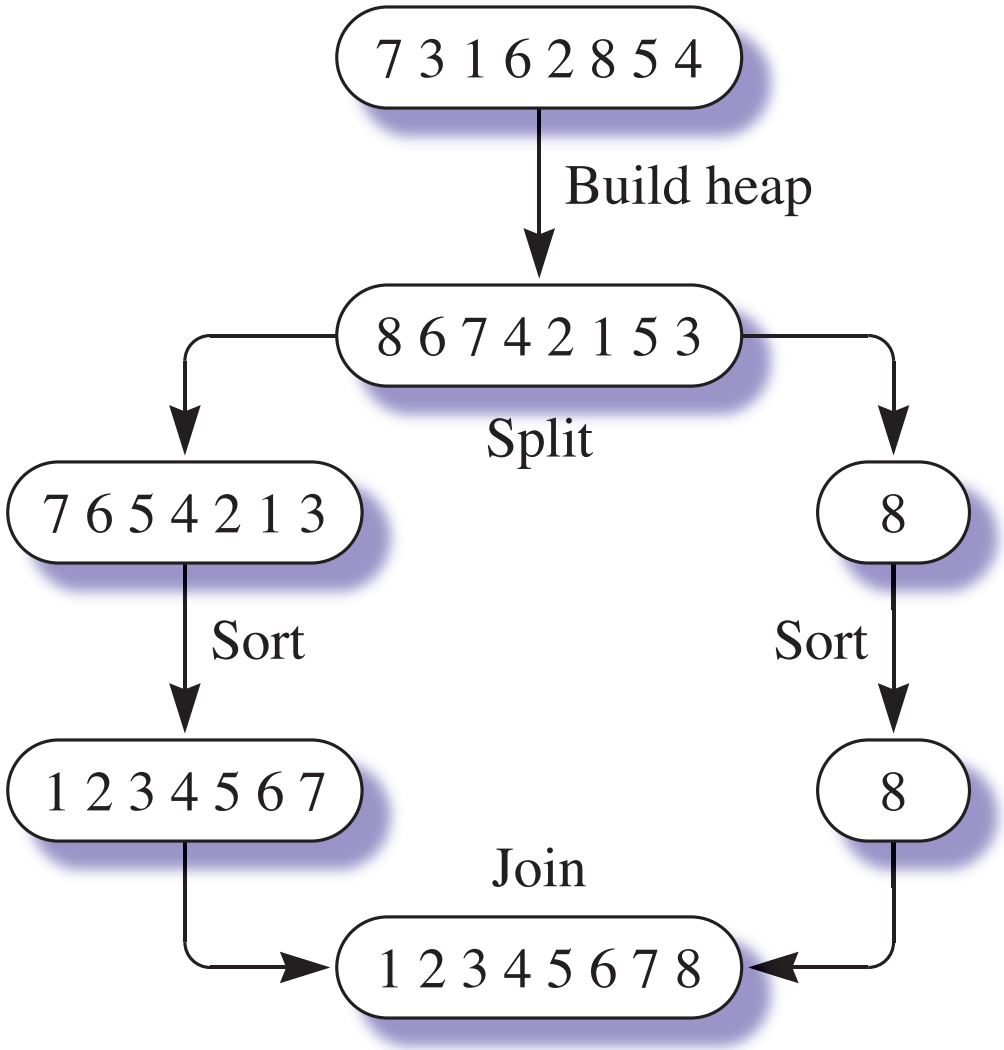
(b) List L after build heap.



7	6	5	4	2	1	3

(c) List $L1$ after the split.

Figure 4.5


7 3 1 6 2 8 5 4
Build heap
8 6 7 4 2 1 5 3
Split
7 6 5 4 2 1 3
8
Sort
Sort
1 2 3 4 5 6 7
8
Join
1 2 3 4 5 6 7 8