Assignment4.3

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Qsort

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1
2  qsort determines a pivot by selecting the middle index between left
       and right. Lets consider the elements between the left and
     right index to be the focus area. The pivot is moved to the
     front of the array. Every number in the focus area is compared
     to the pivot. Last documents the last number less than the
     pivot. If the function finds a number that is less than the
     pivot but whos index is after last, it swaps the first
     number greater than the pivot (last++) and that number so that
     all numbers less than the pivot are together and all numbers
     greater than the pivot are together. Then, the pivot is moved
     in between the numbers that are greater than the pivot and
     numbers that are less than the pivot. At this point, the index
     of the pivot number is sorted. Repeat this process on the
     numbers less than the pivot and the numbers greater than the
     pivot. The base case is when there is only one number in the
     focus area because a single number is by default sorted. After
     every pass of qsort, one more element is 'sorted' in its right
     index.
3
4  Int s[] = {2,6,7,84}
5
6  First pass:
7  {4,6,2,7,8}      index of 7 is sorted
8
9  Second pass:
10 {2,4,6} 7 {8}      6 is sorted, and 8 is sorted
11
12 Third pass:
13 {2,4}6,7,8      2 is sorted
14
15 Four pass:
16 2 {4} 6, 7, 8      4 is sorted
```