Sorting Strategies

I. SELECTION SORT

find lowest value, put it in position 1
then find next-lowest value, put it in position 2
and so on...

$O(n^2)$

15, 8, 2, 3, 13
2, 8, 15, 3, 13
2, 3, 15, 8, 13
2, 3, 8, 15, 13
2, 3, 8, 13, 15

II. BUBBLE SORT

go through the list comparing adjacent values, swapping them if out-of-order. do this n-1 times, making one less comparison at the end each time.
"bubble up large values"

$O(n^2)$

15, 8, 2, 3, 13
8, 15, 2, 3, 13
8, 2, 15, 3, 13
8, 2, 3, 15, 13
8, 2, 3, 13, 15
2, 8, 3, 13, 15
2, 3, 8, 13, 15

III. INSERTION SORT

go from left to right, inserting every new value into its correct position in the ordered collection of values you've already seen.
"like ordering a hand of cards"

$O(n^2)$

15, 8, 2, 3, 13
8, 15, 2, 3, 13
2, 8, 15, 3, 13
2, 3, 8, 15, 13
2, 3, 8, 13, 15

IV. BUCKET SORT

stratify into buckets (e.g. 0-9, 10-19, ...), then sort within buckets, and finally concatenate all buckets' values in order

$O(n^2)$

15, 8, 2, 3, 13
[2, 3] [8] [15, 13]
[2, 3] [8] [13, 15]
2, 3, 8, 13, 15

V. MERGE SORT

sort each adjacent 2, then each adjacent 4 (via linear merging process), then each adjacent 8 (via linear merging process) and so on...

$O(n \log n)$

15, 8, 2, 3, 13
8, 15, 2, 3, 13
8, 15, 2, 3, 13
2, 3, 8, 13, 15

VI. BOGOSORT

no.