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1 COUNTING SORT
2
3 Counting sort is used to sort integers that are known to be nonnegative
4 and have an upper bound (cannot be larger than some value).
5
6 counting_sort(A):
7     // A is an array of integers indexed from 0 to A.size()-1.
8     // We must know ahead of time (or pre-compute it here) the largest possible
9     // integer in the collection (MAX_INT).
10
11     Create a vector/array indexed from 0 to MAX_INT, called count[0..MAX_INT],
12     with all elements initialized to zero.
13
14     for i = 0 to A.size()-1:
15         count[A[i]]++ // count the number of items each item appears
16
17     nextpos = 0
18     for i = 0 to MAX_INT: // distribute the items back into A
19         for j = 0 to count[i]
20             A[nextpos] = i
21             nextpos++
22
23
24 RADIX SORT
25
26 Radix sort is used to sort integers that are always known to be nonnegative
27 and have an upper bound (cannot be larger than some value). Can be used to sort
28 strings as well (26 buckets).
29
30 radix_sort(A):
31     // A is an array of integers indexed from 0 to A.size()-1.
32     // We must know ahead of time (or pre-compute it here) the number of digits
33     // in the largest possible integer in the collection (NUM_DIGITS).
34
35     Create a vector/array of 10 "buckets," where each bucket may hold multiple items
36     in the order in which they are inserted (e.g., each bucket can be a linked list).
37     Call this vector buckets[0..9].
38
39     for d = NUM_DIGITS down to 1: // start at right-most digit in each integer
40         Clear all the buckets.
41
42         Distribute the values of A into the buckets:
43         for i = 0 to A.size()-1:
44             nextdigit = d'th digit of A[i] // assume zero if digit doesn't exist.
45             Add A[i] to the end of bucket[nextdigit]
46
47         Copy the buckets back to A:
48         nextpos = 0
49         for digit = 0 to 9:
50             copy elements of buckets[digit] into the next buckets[digit].size()
51             positions of A starting at position nextpos.
52             nextpos += buckets[digit].size()
53
54

```