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Pledge: I pledge my honor that I have abided by the Stevens Honor System.

1. Consider an array containing the following 40 integers:

5 2 4 4 0 1 6 7 3 1 1 0 5 1 5 4 4 5 7 0 6 1 0 7 5 2 7 6 5 3 7 0 5 5 7 1 1 2 6 5

How many counters does CountingSort need to sort this array: ***7***

Give the value of each counter after the array of counters has been fully initialized:

**5, 7, 3, 2, 4, 9, 4, 6**

1. Consider an array containing the following 32-bit unsigned integers, written as hexadecimal values to save space. Imagine you are using a version of RadixSort that sorts in increasing order (top-down) on one byte at a time (so two hexadecimal digits) using a stable version of CountingSort. Write the full content of the array after each of the four runs of CountingSort:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4EC1EEA9 | 52DB6E42 | 5F05EF13 | 794E8117 | 74284442 |
| 520B6E78 | 74284442 | 794E8117 | 74284442 | 52DB6E42 |
| 1E90D74E | 55526E42 | 52DB6E42 | 1E90D74E | 55526E42 |
| 52DB6E42 | 5F05EF13 | 74284442 | 52DB6E42 | 520B6E78 |
| 5F05EF13 | 794E8117 | 55526E42 | 55526E42 | 794E8117 |
| 74284442 | 520B6E78 | 1E90D74E | 520B6E78 | 1E90D74E |
| 794E8117 | 4EC1EEA9 | 520B6E78 | 4EC1EEA9 | 4EC1EEA9 |
| 55526E42 | 1E90D74E | 4EC1EEA9 | 5F05EF13 | 5F05EF13 |