

Radix Sort

Radix Sort Stable Digit

Analysis

Radix Sort

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Analysis

Radix Sort

For *n* numbers with *d* digits (digit has *k* values):

- 1: arr \leftarrow input
- 2: **for** *i* from 0 to *d* **do**
- 3: arr \leftarrow stable sort arr on digit in place *i* from right
- 4: return arr



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Stable Digit Sort

Input array A contains n numbers with digits in the range 0 to k. Counting takes place using relevant digit only, but the whole value is preserved.

STABLEDIGITSORT(A, digit)

- 1: for all input number x do
- 2: increment count[digit(x)]
- 3: **for** x from 0 to *k* **do**
- 4: set pos[x] to number of items < x
- 5: for each input number x (in order) do
- 6: write x in output array at index pos[digit(x)]
- 7: increment pos[digit(x)]



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Correctness Complexity

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Correctness

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Complexity

What is the invariant property of radix sort?



Complexity

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Limitations

What is the time complexity? What is the space complexity?



Limitations

Radix Sort Analysis Correctness Complexity Limitations

Why isn't radix sort implemented more?