2.3 Quicksort Demo

http://algs4.cs.princeton.edu

Quicksort

Basic plan.

input

Q	U	I	C	K	S	O	R	T	E	X	A	M	P	L	E

Quicksort

Basic plan.

- Shuffle the array.

shuffle

Q	U	I	C	K	S	O	R	T	E	X	A	M	P	L	E

Quicksort

Basic plan.

- Shuffle the array.

shuffle

K	R	A	T	E	L	E	P	U	I	M	Q	C	X	O	S

Quicksort

Basic plan.

- Shuffle the array.
- Partition so that, for some j
  - entry a[j] is in place
  - no larger entry to the left of j
  - no smaller entry to the right of j

partition

Quicksort

Basic plan.

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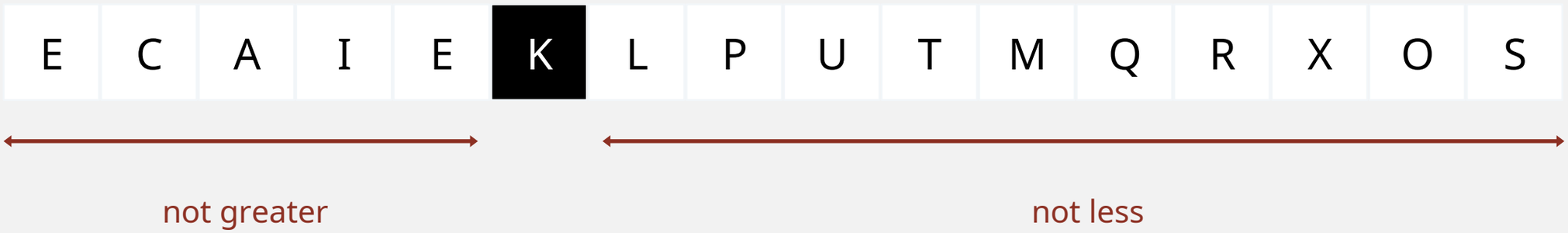
- Partition so that, for some j
  - entry a[j] is in place
  - no larger entry to the left of j
  - no smaller entry to the right of j

partition



Quicksort

Basic plan.

- Shuffle the array.
- Partition so that, for some j
  - entry a[j] is in place
  - no larger entry to the left of j
  - no smaller entry to the right of j
- Sort each subarray recursively.

sort the left subarray

E	C	A	I	E	K	L	P	U	T	M	Q	R	X	O	S

Quicksort

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- Shuffle the array.
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  - no larger entry to the left of j
  - no smaller entry to the right of j
- Sort each subarray recursively.

sort the left subarray

Quicksort

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  - no smaller entry to the right of j
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sort the right subarray

Quicksort

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- Partition so that, for some j
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sort the right subarray

Quicksort

Basic plan.

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- Partition so that, for some j
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- Sort each subarray recursively.

sorted array

A	C	E	E	I	K	L	M	O	P	Q	R	S	T	U	X