

Lecture 16: Algorithms

CS 51P

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he/him/his

al·go·rithm

/ˈalgəˌrɪθəm/ 

noun

a process or set of rules to be followed in calculations or other problem-solving operations, especially by a computer.

"a basic **algorithm** for division"

Example: Sorting



Example: Sorting



Visualize sorting algorithms

- visualgo.com

Live demo

- Volunteers
- Selection sort
- Insertion sort
- Mergesort



Convert to code

In case you didn't get insertion sort...even if you got it... watch

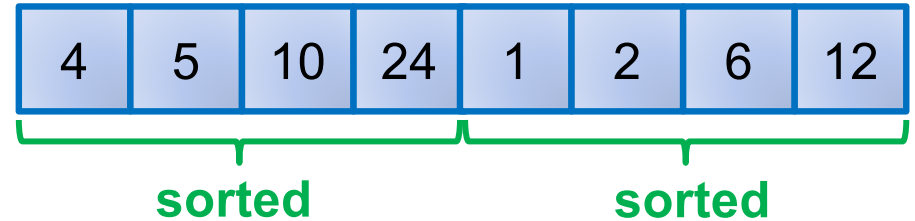
- <https://www.youtube.com/watch?v=ROalU379l3U>



Convert to code

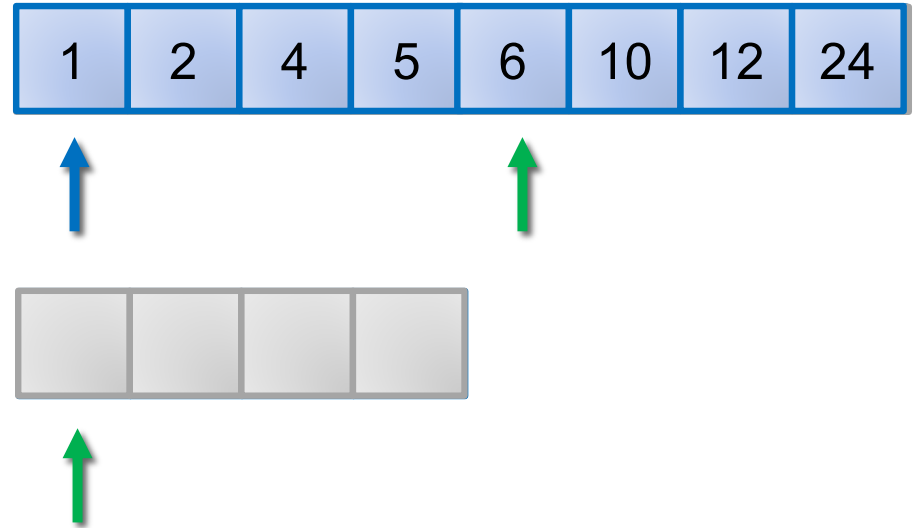
Merging

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- We could sort by merging the two lists!



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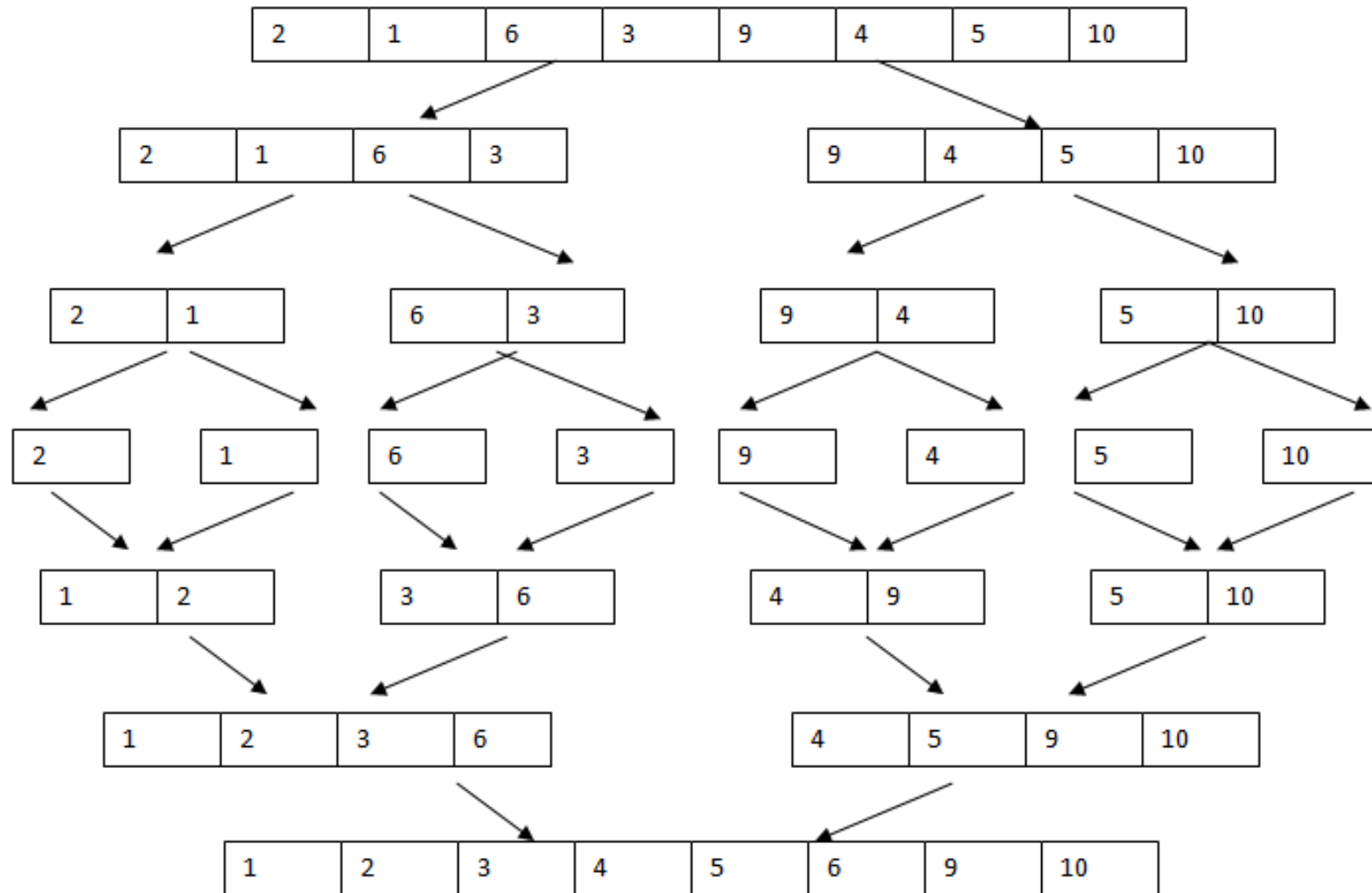




<http://algs4.cs.princeton.edu>

2.2 MERGING DEMO

Mergesort



	Insertion sort			Mergesort		
Computer	Thousand inputs	Million inputs	Billion inputs	Thousand inputs	Million inputs	Billion inputs
Home	Instant	2 hours	300 years	instant	1 sec	15 min
Supercomputer	Instant	1 second	1 week	instant	instant	instant