Programming fundamentals with Python

Pepe García

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Programming fundamentals with Python

Plan for today

Understand bubblesort

Understand mergesort

Bubblesort

Easy to implement sorting algorithm

Works by comparing pairs of numbers in the list

Has a pretty bad performance

original = [5,3,2,24,5,1]

```
[5, 3, 2, 24, 5, 1]
[3, 5, 2, 24, 5, 1]
[3, 2, 5, 24, 5, 1]
[3, 2, 5, 24, 5, 1]
[3, 2, 5, 5, 24, 1]
[3, 2, 5, 5, 1, 24]
[2, 3, 5, 5, 1, 24]
[2, 3, 5, 5, 1, 24]
[2, 3, 5, 5, 1, 24]
[2, 3, 5, 1, 5, 24]
```

Bubblesort

6 volunteers please!

Bubblesort

Now let's code it!

Recursion

Recursion is a technique to solve problems in terms of smaller versions of the same problem

Recursion

Recursion

Recursion

Recursion

Recursion

Mergesort

Mergesort uses a technique commonly known as **divide and conquer**. The idea behind **mergesort** is divide the list into smaller lists, and merge them in an ordered fashion.

Mergesort

*Divide and conquer algorithms try to solve the problem by dividing it into **smaller subproblems**, solving them first and then combining them.*

Mergesort

Mergesort