

Solving things with bisection



Show & Tell /

Mathematical analysis **Bisection method**

- Root-finding method f(x) = 0 for real numbers x
- Applies to continuous function defined on interval *I =[a, b]*
- Bolzano's theorem
 - Two values $f(\alpha)$ and f(b) with opposite signs has a root
- Repeatedly bisecting the defined interval
- And selecting of subinterval in which function changes sign
- Gives us a rough approximation of the root
- Solving equations in the real numbers









In the wild Usage of bisection

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for His (or Her) Royal Highness.

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noid ('hju:ma,noid) adj. 1. like a hur humanold ('hjump,nsid) adj. 1. like a human being in appearance. -n. 2. a being with human rather than anthropoid characteristics. 3. (in science fiction) a robot or creature resembling a human being. human rights pl. n. the rights of individuals to liberty, justice, etc. humble ('hambil) adj. 1. conscious of one's failings. 2. unpretentious; lowly: a humble cottage; my humble opinion. 3. deterential or semble. humiliate. 3. to lower in sec. io become humble thumiliate. 3. to lower in sec. io become

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In the wild Usage of bisection

Guess the number between 0 and 100



Computer Science Bisection by hand







Computer Science Binary search

- Bisection search / binary search / logarithmic search
- Find the position within a **sorted** array

Performance:

157

- Worst-case: O(log n)
- Best-case: O(1)
- Average: O(log n)
- Worst-case space complexity: O(1)

Although the basic idea of binary search is comparatively straightforward, the details can be surprisingly tricky

Donald Knuth, professor at Stanford University

Me trying to remember, "Binary Search" Algorithm before interview.





Git bisect command

NAME

git-bisect - Use binary search to find the commit that introduced a bug

SYNOPSIS

git bisect <subcommand> <options>

DESCRIPTION

The command takes various subcommands, and different options depending on the subcommand:







Binary-schminary Why bother?

Number of commits

15 37

Steps to check

10	log ₂ (10) ~ 4
100	~ 7
1k	~ 10
10k	~ 14
100k	~ 17
1M	~ 20







Questions and feedback





