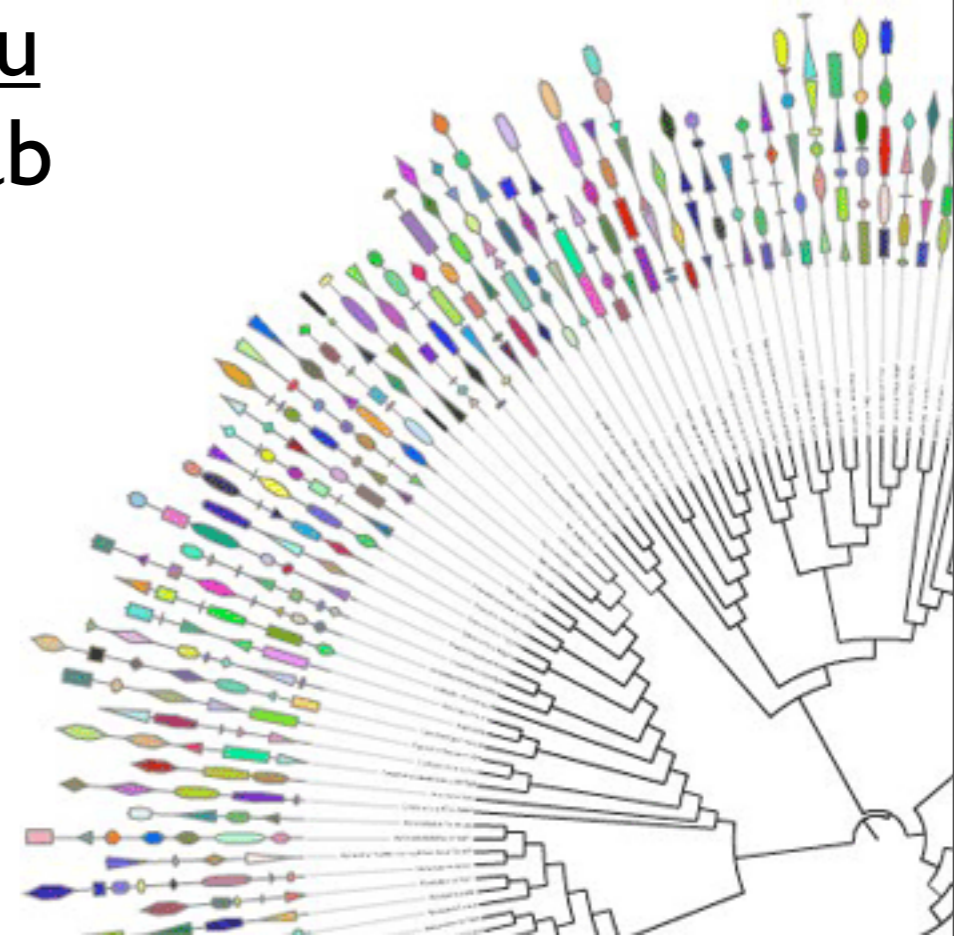# Rosalind

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Algorithmic Biology Lab

Rosalind

- Programming and testing environment for bioinformatics problems.

- Project Euler + Google Code Jam + more.

- Open access, 100+ problems.

- Professors' environment.

- Currently in beta @ http://rosalind.info.

ROSALIND β   About   Problems   Statistics   Problem ID...   Profile   Logout

Problem 8
Sorting by Reversals

28 мая 2012 г.   Topics: Genome Rearrangements, Brute Force

In their simplest form, rearrangement events can be modeled by a series of reversals that transform one genome into another. The order of genes (rather, of synteny blocks) in a genome can be represented by a permutation. For example, if $\pi = 1243756$, then $\pi \cdot rev(3, 6) = 1257346$.

Given two permutations of integers from 1 to 10, find a smallest number of reversals that transforms one permutation into another.

Sample Input

```
1 2 3 4 5 6 7 8 9 10
3 1 5 2 7 4 9 6 10 8
```

Sample Output

```
9
```

Extra info

Intoduction

In some ways, the human genome is just the mouse genome cut into about 300 large genomic fragments, called synteny blocks, that have been pasted together in a different order. Both sequences are just two different shufflings of the ancient mammalian genome. For example, chromosome 2 in humans is built from fragments that are similar to mouse DNA residing on chromosomes 1, 2, 3, 5, 6, 7, 10, 11, 12, 14, and 17. It is no surprise, then, that finding a gene in mice often leads to clues about the location of the related gene in humans. Every genome rearrangement results in a change of gene ordering, and a series of these rearrangements can alter the genomic architecture of a species.

From "An Introduction to Bioinformatics Algorithms" by Jones & Pevnzer.

Time limit You'll have 10 minutes to upload the solution.

Congratulations You solved this problem (attempt #1). You can post your solution or idea here.

Download dataset

Attempts

#	Begin Time	Submit Time	Result
1	30 мая 2012 г. 14:24:00	30 мая 2012 г. 14:24:53	Correct

Internship

- Python / C++

    - dataset generation

    - problem solving

    - answer checking

- Algorithms (strings, graphs, dynamic programming)

- Math

http://bioinf.spbau.ru/int