

The Simplest String Comparison Problem

Given: Two strings

$$a = a_1a_2a_3a_4\dots a_m$$

$$b = b_1b_2b_3b_4\dots b_n$$

where a_i, b_i are letters from some alphabet like {A,C,G,T}.

Compute how **similar** the two strings are.

What do we mean by “similar”?

Edit distance between strings a and b = the smallest number of the following operations that are needed to transform a into b :

- mutate (replace) a character
- delete a character
- insert a character

riddle $\xrightarrow{\text{delete}}$ ridle $\xrightarrow{\text{mutate}}$ riple $\xrightarrow{\text{insert}}$ triple