Competitive Programing

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Abbreviation.py

Our goal is to find a bottom-up approach, let's analize the example:

$$a = \text{AbcDE}, b = \text{ABDE}$$

Given two string with letters $a = a_0a_1...$, $b = b_0b_1...$, define:

$$F(i,j) = 1, \quad \text{if } b[0:i] \text{ is an abbrevation of } a[0:j], \text{ 0 otherwise}$$

our answer is then $F(-1,-1)$. Then our goal is to find a recursive relation for $F(i,j)$, we already know the following:

$$F(i,j) = 0, \quad \text{if } i > j$$

we have two cases:

1. $a[j]$ upper case.
   (a) $a[j] = b[i]$ and $F(i-1, j-1) = 1$, then 1, otherwise 0
2. $a[j]$ lower case
   (a) upper $a[j] = b[i]$, if $F(i-1, j-1) = 1$ or $F(i, j-1) = 1$, then 1 otherwise 0.
   (b) upper $a[j] \neq b[i]$, if $F(i, j-1) = 1$, then 1 otherwise 0.