Edit Distance Worksheet

The purpose of this exercise is to get you comfortable with the notation used in the edit distance problem and with the recursive formulation.

Given source string s = kasparov and target string t = karpov. Note that the length of s (denoted |s|) is 8 and |t| = 6.

1. What does the function call string compare(s, t, 2, 2) return? (Hint: you should be able to answer this by visually inspecting the two strings.)

   s = kasparov t = karpov

   s_c(s, t, 2, 2) = 0 (match)

2. Suppose that function string compare returns the following values for three different combinations of i and j:

i	j	output
8	5	4
7	6	4
7	5	3

Use this to determine the output of string compare(s, t, 8, 6) -> full target.

s_c(s ,t, i, j) = min(

    s_c(s, t, i-1, j-1) + match(s[i], [j]),

    s_c(s, t, i, j-1) + 1

    s_c(s, t, i-1, j) + 1

)

s_c(s ,t, 8, 6) = min(

    s_c(s, t, 7, 5) + match('v', 'v'), →3 + 0

    s_c(s, t, 8, 5) + 1 → 4 +1

    s_c(s, t, 7, 6) + 1 → 4 +1

)

min(3,5,5) = 3