Algorithm Find the length of the longest comomon subsequence of 2 strings

Ensure: Zero Based Indexing for the Matrix, One Based Index for the Strings

1: **function** LCS(str_1, str_2)
▷ $lcs[i][j]$ denotes the longest common subsequence of the first i characters of str_1 and the first j characters of str_2
2: $lcs[i][0] \leftarrow 0$ $\forall i$ ▷ The first string is empty
3: $lcs[0][j] \leftarrow 0$ $\forall j$ ▷ The second string is empty
4: **for** $i = 1 : str_1.len$ **do**
5: **for** $j = 1 : str_2.len$ **do**
6: $exclude\_top \leftarrow lcs[i-1][j]$
7: $exclude\_bot \leftarrow lcs[i][j-1]$
8: $exclude\_both \leftarrow lcs[i-1][j-1]$
9: $match \leftarrow 1 + lcs[i-1][j-1]$
10: **if** $str_1[i] == str_2[j]$ **then**
11: $lcs[i][j] \leftarrow match$
12: **else**
13: $lcs[i][j] \leftarrow max(exclude\_top, exclude\_bot, exclude\_both)$
14: **return** $lcs[str_1.len][str_2.len]$