longest Common Subsequence

Q: 4(b)

Given 2 sequences say "ABCD & "ACF" LCS is a Sequence that appears in the same relative order in both the given sequences but not necessarily in a continous manner

exp1: ABACCD ACDD
LCS is ACD of length 3.

exp2: X = A B C F Y = A B E
0 1 2 3 0 1 2

Xlen = 4 Ylen = 3

L ← length of the longest common subsequence
L is a 2D array having rows Xlen+1 and Columns Ylen+1 i.e 5 & 4 resp.

		A	B	C
L	0	1	2	3
0	0	0	0	0
A 1	0	↖ 1	← 1	← 1
B 2	0	↑ 1	↖ 2	← 2
C 3	0	↑ 1	↑ 2	↖ 3
F 4	0	↑ 1	↑ 2	↑ 3

If X[r-1] = Y[c-1] then

L[r][c] = L[r-1][c-1] + 1

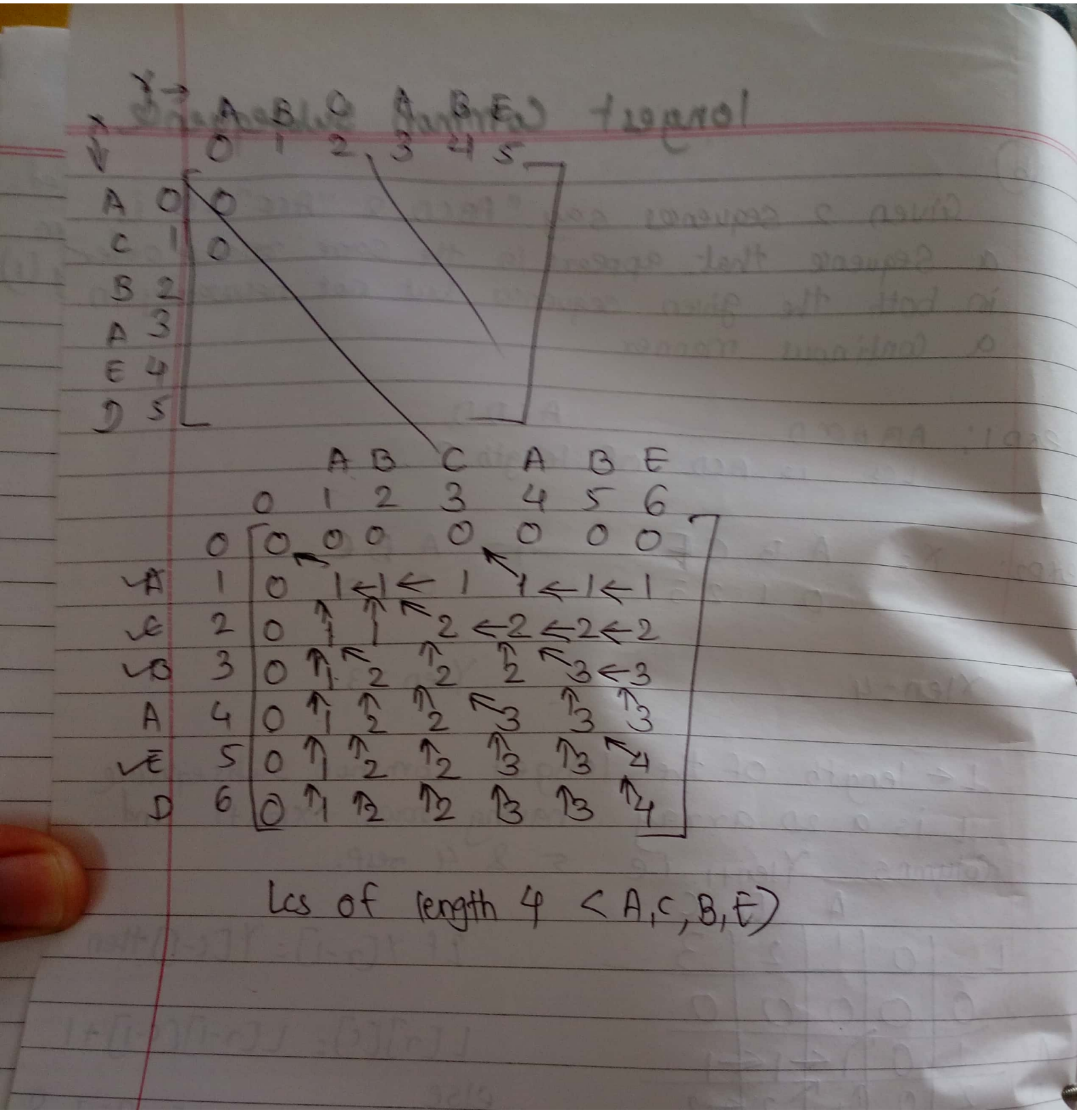
else

$$L[r][c] = \max\{L[r-1][c], L[r][c-1]\}$$

LCS of length 3 <A, B, C>

Soln: 0 1 2 3 4 5 X = A C B A E D
0 1 2 3 4 5 Y = A B C A B E

Create a matrix of size 6 x 6



Lcs of length 4 < A, C, B, E)