Tyler Huynh

j	-	c	o	l	o	r
i	0	1	2	3	4	5
- 0	0	0	0	0	0	0
c 1	0	1	1	1	1	1
l 2	0	1	1	2	2	2
e 3	0	1	1	2	2	2
a 4	0	1	1	2	2	2
r 5	0	1	1	2	2	3

Recurrence of Longest Common Subsequence:

$$c[i,j] = \begin{cases} 0 & \text{if } i=0 \text{ or } j=0 \\ c[i-1][j-1]+1 & \text{if } i,j > 0 \text{ and } x_i = y_i \\ \max(c[i,j-1], c[i-1,j]) & \text{if } i,j > 0 \text{ and } x_i \neq y_j \end{cases}$$

Steps

1.) The first step we would do would be to compare 3 at $c[5,5]$ since x_5 and y_5 are equal to each other we know that this value came from $c[4,4]$

2.) The next step we would do would be to determine where $c[4,4]$ came from so we would compare x_4 and y_4 and we know these values do not equal, we know this comes from the max of $c[4,3]$, $c[3,4]$ which 2 respectively, so we know that we can $c[4,4]$ from either of these values.

3.) The next step we would do would be to determine where $c[4,3]$ and $c[3,4]$ came from, we would compare x_4 and y_3 for $c[4,3]$ and we see they're not equal to each other, thus $c[4,3]$ comes from the max of $c[4,2]$ and $c[3,3]$ and the max will be 2 which is $c[3,3]$, for $c[3,4]$ we will compare the values of x_3 and y_4 which are not equal, we see that $c[3,4]$ came from the max of $c[3,3]$ and $c[2,4]$ which is 2. There are other same values so there values can come from either position.