Recursive Characterization

- We can formulate recurrence for cost optimal solution from above characterization.
- If either of the sequence is of length 0 then LCS has length 0.
- Other cases are determined by the recursive characterization involving optimal substructure property.

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