Longest Common Subsequence

The longest common subsequence (LCS) is defined as the longest subsequence that is common to all the given sequences, provided that the elements of the subsequence are not required to occupy consecutive positions within the original sequences.

Here longest means that the subsequence should be the biggest one. The common means that some of the characters are common between the two strings. The subsequence means that some of the characters are taken from the string that is written in increasing order to form a subsequence.

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Suppose X and Y are the two given sequences
Initialize a table of LCS having a dimension of X.length * Y.length
XX.label = X
YY.label = Y
LCS[0][] = 0
LCS[][0] = 0
Loop starts from the LCS[1][1]
Now we will compare X[i] and Y[j]
   if X[i] is equal to Y[j] then
     LCS[i][j] = 1 + LCS[i-1][j-1]
     Point an arrow LCS[i][j]
  Else
   LCS[i][j] = max(LCS[i-1][j], LCS[i][j-1])
```

Time complexity = O(mn)