15.4-3 : Give a memoized version of LCS-Length that runs in $O(mn)$ time.

```
INIT_TABLE(X,Y): # initialize the empty
                   c table.
    m = X.Length
    n = Y.Length
    let c[0...m, 0...n] be a new table
    for i = 1 to m:
        for j = 1 to n:
            c[i,j] = None

    return c
```

```
Memoized_LCS_Length (c, X, Y, i, j)
    m = X.Length
    n = Y.Length
    if  i == 0  or  j == 0 :
        return
    if  c[i, j] ≠ none :
        return  c[i, j]
    if  x_i == y_i :
        c[i, j] = 1 + Memoized_LCS_Length
                      (c, X, Y, i-1, j-1)
        return  c[i, j]
    else :
        c[i, j] = 1 + max
                  { Memoized_LCS_Length (c, X, Y, i-1, j)
                  { Memoized_LCS_Length (c, X, Y, i, j-1)
    return  c[i, j]
```