sequences $X = \langle A, B, C, B, D, A, B \rangle$ and $Y = \langle B, D, C, A, B, A \rangle$. The running time of the procedure is $\Theta(mn)$, since each table entry takes $\Theta(1)$ time to compute.

```
LCS-LENGTH(X, Y, m, n)
let b[1 : m, 1 : n] and c[0 : m, 0 : n] be new tables
for i = 1 to m
    c[i, 0] = 0
for j = 0 to n
    c[0, j] = 0
for i = 1 to m              // compute table entries in row-major order
    for j = 1 to n
        if x_i == y_j
            c[i, j] = c[i - 1, j - 1] + 1
            b[i, j] = "↖"
        elseif c[i - 1, j] ≥ c[i, j - 1]
            c[i, j] = c[i - 1, j]
            b[i, j] = "↑"
        else c[i, j] = c[i, j - 1]
            b[i, j] = "←"
return c and b
```

```
PRINT-LCS(b, X, i, j)
if i == 0 or j == 0
    return                  // the LCS has length 0
if b[i, j] == "↖"
    PRINT-LCS(b, X, i - 1, j - 1)
    print x_i               // same as y_j
elseif b[i, j] == "↑"
    PRINT-LCS(b, X, i - 1, j)
else PRINT-LCS(b, X, i, j - 1)
```

Step 4: Constructing an LCS

With the b table returned by LCS-LENGTH, you can quickly construct an LCS of $X = \langle x_1, x_2, \ldots, x_m \rangle$ and $Y = \langle y_1, y_2, \ldots, y_n \rangle$. Begin at $b[m, n]$ and trace through the table by following the arrows. Each "↖" encountered in an entry $b[i, j]$ implies that $x_i = y_j$ is an element of the LCS that LCS-LENGTH found. This method gives you the elements of this LCS in reverse order. The recursive procedure PRINT-LCS prints out an LCS of X and Y in the proper, forward order.