ALGORITHMS, FALL 2018, HOMEWORK 8

Due Thursday, November 1 at 11:59pm.
Worth 1% of the final grade.
Recall that looking up algorithms online is not allowed.

1. Design any polynomial-time algorithm to get a LCS (not just the length of the LCS) of two strings of length n, using $O(n)$ space.

   In polynomial time is fairly straightforward, as we can simply scan over each character of the first string, and attempt to run a parallel scan on each character of the second string. This is polynomial time because it will have to run 1 scan per character in the second string (n scans), as well as 1 scan per character in the first (so n scans n times is n^2).

   This is $O(n)$ space because we only store the longest string and the string we're currently looking at. This is worst case $2n - 1$ which is still $O(n)$,.