Project 2 Milestone 1

By,

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Pseudocode:

int LCS(X, Y, n, m):

int L[n][m];

for I to n:

for j to m:

if I or j = 0:

L[i][j] = 0;

Else if X[I – 1] = Y[j – 1]:

L[i][j] = L[I - 1][j – 1] + 1

Else:

L[i][j] = max(L[I – 1][j], L[i][j – 1]

Return L[n][m]

Work Calculations:

The work calculation is simply the runtime of a serial version of an algorithm. in creating the LCS pseudocode there’s the following runtimes in the code.

There’s a constant time initialization of a 2d int array. Next we have a doubly nested for loop, of size **n** and **m** respectively. Inside the double for loop, are constant time calls. With an N and M sufficiently large, they are asymptotically much larger than the constant time calls. Therefore we can say that the runtime of LCS will be theta( n \* m ) where the worst case will be n = m, therefore we can say it’s equal to. N \* N, so the work of the LCS algorithm will be: