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Assignment 2

**Time analysis**

The code is O(NM) as N is the size of first String input and M is the size of second String as we make 2d Array for DP and we make tabulation and we fill the 2 array so we loop over the 2d of size M\*N and we traverse the diraction matrix that have the same size M\*N from right down to build alignment score so the overall time analysis is O(MN)

**Brief explination of my approch**

The code simply intialize two matrics one to score the score matrix in it

First of all we intialize our boundries that is the first row and first column that is calculated by the previous resultmatrix one index to left if we intialize row as resultmatrix[0][j-1]+ score matrix between first string each character and (-)

As like the column with changes of resultmatrix[j-1][0] and loop of characters of second inputstring

and then apply the recurrence relation for the algorithm

That is result Matrix [i][j]= Max{

* resultmatrix[i-1][j-1] + scoreMatrix of two character (diagonal)
* resultmatrix[i-1][j] + scoreMatrix of character and (-) (up)
* Resultmatrix [i][j-1]+ scoreMatrix of (-) and character ( left)

}

and one called direction matrix, we build the answer from it and we same if maxscore is first we make directionMatrix[i][j]=”diagonal” or if the max second we make directionMatrix[i][j]=”up” or if the max third we make directionMatrix[i][j]=”left’’

and when we make the answer we begin to traverse the directtion matrix from button right and if it is diagonal we know that we should move diagonal so we subtact 1 form I and j loop variables and so on in up and left after we mae the aligned strings we calculate alignment score by looping and get from score matrix the values and put it in variable called alignment score

**for testing**

testing is done in the main method you can edit the input strings and the input scoring matrix with it’s value and It will output the aligend sequence of x and y and alignment score