Design & Analysis Of Algorithm

Lab Experiment -11

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SUBJECT: DESIGN & ANALYSIS OF ALGORITHM

SUBJECT CODE: 19CSE302

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EX NO:11

Longest Common Subsequence.

AIM:

To write an algorithm to implement Longest Common Subsequence.

ALGORITHM:

1. Suppose X and Y are the two given sequences
2. Initialize a table of LCS having a dimension of X.length * Y.length
3. XX.label = X
4. YY.label = Y
5. LCS[0][] = 0
6. LCS[][0] = 0
7. Loop starts from the LCS[1][1]
8. Now we will compare X[i] and Y[j]
9. if X[i] is equal to Y[j] then
10. LCS[i][j] = 1 + LCS[i-1][j-1]
11. Point an arrow LCS[i][j]
12. Else
13. LCS[i][j] = max(LCS[i-1][j], LCS[i][j-1])

CODE SCREEN:

```
def LCS(A, B, n, m):
    p = []
    LCS = [[0 for col in range(0, n+1)] for row in range(0, m+1)]
    for i in range(1, m+1):
        for j in range(1, n+1):
         if A[j-1] == B[i-1]:
            LCS[i][j] = 1 + LCS[i-1][j-1]
            p.append(A[j-1])
        else:
            LCS[i][j] = max(LCS[i-1][j], LCS[i][j-1])
    print("\nLCS Table: ")
    for i in range(0, m+1):
```

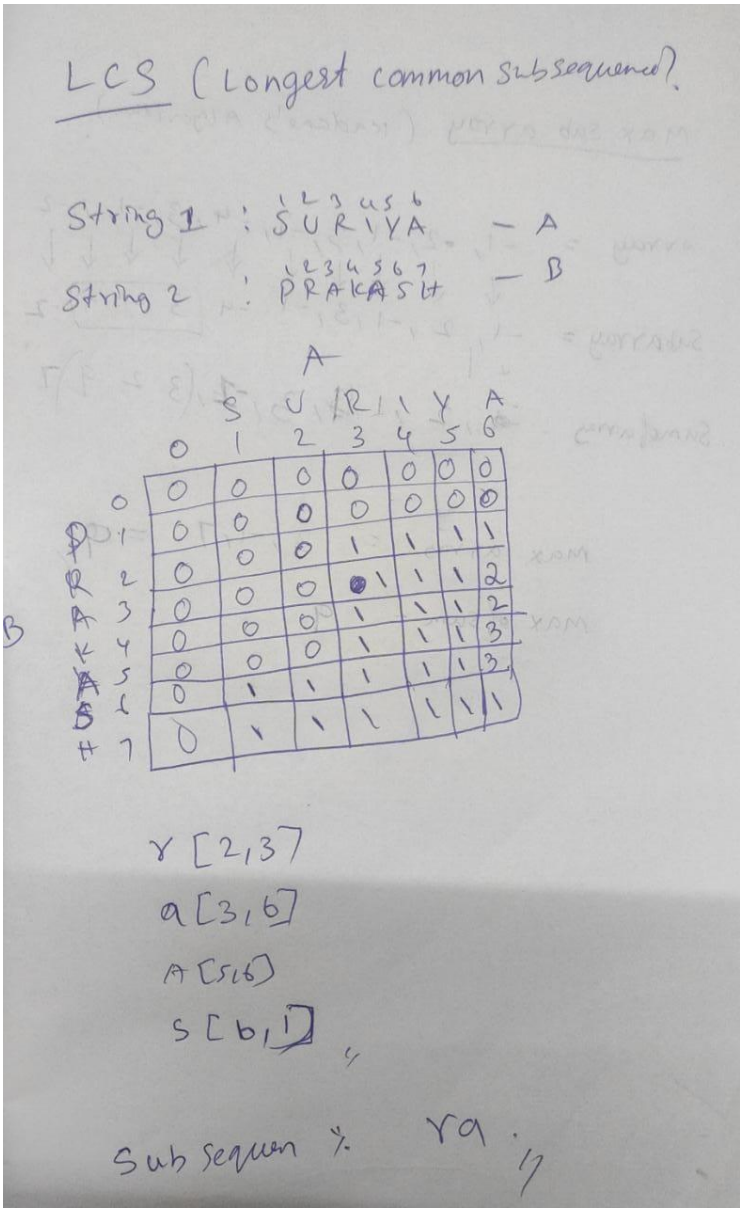
```
        for j in range(0, n+1):
            print(LCS[i][j], end=" ")
        print("")
    return p

A = list(input("First string: "))
B = list(input("Second string: "))
n = len(A)
m = len(B)
if n > m:
 result = LCS(A, B, n, m)
else:
 result = LCS(B, A, m, n)
print("\nLongest Common Subsequence: ", result)
```

OUTPUT SCREEN :

TIME COMPLEXITY:

O(n*m)



RESULT:

I have studied and understood the Longest Common Subsequence program in python language and executed the program successfully.

THANK YOU !!