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SUBJECT	**DAA**
EXPERIMENT No.	**4**
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AIM:	**Experiment based on longest common subsequence**
	Program 1
PROBLEM STATEMENT :	**Input 2 Strings.** **Calculate LCS and print the result**
LCS :	**The longest common subsequence (LCS) is defined as the longest subsequence that is common to all the given sequences, provided that the elements of the subsequence are not required to occupy consecutive positions within the original sequences.**
PROGRAM:	**// The longest common subsequence in C** **#include <stdio.h>** **#include <string.h>** **int i, j, m, n, LCS_table[20][20];** **char b[20][20];** **char str1[20];** **char str2[20];** **void lcsAlgo() {** **printf("Enter str 1");** **gets(str1);** **printf("Enter str 2");** **gets(str2);** **m = strlen(str1);** **n = strlen(str2);** **for (i = 0; i <= m; i++)** **LCS_table[i][0] = 0;** **for (i = 0; i <= n; i++)** **LCS_table[0][i] = 0;**

```
  for (i = 1; i <= m; i++)
   for (j = 1; j <= n; j++) {
    if (str1[i - 1] == str2[j - 1]) {
     LCS_table[i][j] = LCS_table[i - 1][j - 1] + 1;
    } else if (LCS_table[i - 1][j] >= LCS_table[i][j - 1]) {
     LCS_table[i][j] = LCS_table[i - 1][j];
    } else {
     LCS_table[i][j] = LCS_table[i][j - 1];
    }
   }

  int index = LCS_table[m][n];
  char lcsAlgo[index + 1];
  lcsAlgo[index] = '\0';

  int i = m, j = n;
  while (i > 0 && j > 0) {
   if (str1[i - 1] == str2[j - 1]) {
    lcsAlgo[index - 1] = str1[i - 1];
    i--;
    j--;
    index--;
   }

   else if (LCS_table[i - 1][j] > LCS_table[i][j - 1])
    i--;
   else
    j--;
  }

  // Printing the sub sequences
  printf("S1 : %s \nS2 : %s \n", str1, str2);
  printf("LCS: %s", lcsAlgo);
}

int main() {
  lcsAlgo();
  printf("\n");
}
```

OUTPUT

```
Enter str 1 BCDAACD
Enter str 2 ACDBAC
S1 :  BCDAACD
S2 :  ACDBAC
LCS:  CDAC
```

CONCLUSION

Successfully studied and performed LCS on 2 strings