ASSIGNMENT- III

NAME: SOUMYADIP GHOSH

STREAM: CSE-A

ROLL NUMBER: 1951007

SUBJECT: ALGORITHMS LAB

Question: To Implement Longest Common Subsequence in C

Solution:

#include <stdio.h>

#include <stdlib.h>

#include<string.h>

#define max(a,b) (((a)>(b))?(a):(b))

void printlcs(int C[][8],char\* str1,int m,int n,char\* lcs)

{

int i=m;

int j=n;

while(C[i][j]>0)

{

if(C[i][j-1]==C[i][j])

{

if(C[i-1][j]==C[i][j])

{

printlcs(C,str1,i-1,j,lcs);

}

j--;

}

else if(C[i-1][j]==C[i][j])

{

if(C[i][j-1]==C[i][j])

printlcs(C,str1,i,j-1,lcs);

i--;

}

else

{

lcs[C[i][j]-1]=str1[i-1];

i--;

j--;

}

}

printf("%s\n", lcs);

}

void lcs( char \*str1, char \*str2, int m, int n )

{

int C[m+1][n+1],L[100];

char lcs[30];

int i,j,k,l;

for (i=0; i<=m; i++)

{

for (j=0;j<=n;j++)

{

if (i==0||j==0)

C[i][j]= 0;

else if (str1[i-1] == str2[j-1])

C[i][j]= C[i-1][j-1]+ 1;

else

C[i][j]= max(C[i-1][j],C[i][j-1]);

}

}

l= C[m][n];

printf("The length of LCS is:%d",C[m][n]);

printf("\nTable for LCS:\n");

for(i=0;i<=m;i++){

for(j=0;j<=n;j++){

printf("%d ",C[i][j]);

}

printf("\n");

}

lcs[l]='\0';

printf("\nAll possible subsequence:\n");

printlcs(C,str1,m,n,lcs);

}

int main()

{

int m,n;

char str1[50],str2[50];

printf("\nEnter the main string:");

fgets(str1,50,stdin);

printf("\nEnter the substring:");

fgets(str2,50,stdin);

m = strlen(str1)-1;

n = strlen(str2)-1;

lcs(str1,str2,m,n);

return 0;

}

OUTPUT:

 

